MEDICAL, LIFESTYLE, AND ALLERGY TREATMENTS OF SNORING AND SLEEP APNEA

OVERVIEW

Effective treatment of snoring and OSA depends on proper diagnosis and location of the anatomic source of the problem. Treatments can be medical or surgical and vary in efficacy. Medical treatments include lifestyle changes (weight loss and dietary changes), sleep positioning pillows, nasal sprays, dental/oral appliances, nasal strips, and positive pressure mask devices. Inhalant allergies may also contribute to snoring and OSA, and should be treated when present. Medical interventions are preferable to surgery; however, some of the interventions (ie-use of the continuous positive airway pressure device) are uncomfortable and have poor patient compliance.

Surgical treatments include nasal surgery, adenoid and tonsil surgery, palate surgery, and jaw surgery (mandibular advancement). Some of these surgeries may be performed with the laser (laser-assisted uvulopalatoplasty, or LAUP) Unfortunately most of the surgeries involving the oral cavity (tonsils, palate, jaw) and pharynx (uvulopalatopharyngoplasty, or UPPP) have significant pain and morbidity as well as lengthy patient recovery times with only modest success rates.

One “meta-analysis” which evaluated the results of 37 other studies representing 992 patients found only a 40% success rate in patients who underwent UPPP\(^1\). Others have shown that in a large subset of patients, UPPP may not only fail to improve patient symptoms, but may, in fact, result in a worsened patient condition\(^2\)! UPPP is also associated with some significant complications. In a review of 3130 patients who underwent UPPP, there were 47 (1.5%) serious, non-fatal complications, and 7 (0.2%) deaths. An additional 91 (3%) complications ranging from respiratory complications, re-intubation, and pneumonia to cardiovascular complications and hemorrhage were also documented.
Fortunately, the past few years have seen the rise of a variety of effective, minimally-invasive treatments for snoring and sleep apnea. These treatments, along with others, will be discussed in detail in this and the following chapters.

**MEDICAL TREATMENTS**

*Continuous Positive Airway Pressure (CPAP)*

Continuous Positive Airway Pressure (CPAP) has long been considered a standard treatment option for patients with OSA for decades. With CPAP, patients sleep with a mask that forcibly opens the airway and resists the collapse associated with OSA. While the treatment can be very effective when utilized properly it is, unfortunately, often felt to be very cumbersome – both for the patient and his/her bed partner [FIGURE 1]. Some patients find the device claustrophobic and disruptive. Others find that using CPAP leads to nasal stuffiness, post-nasal drainage, and congestion. As a consequence, many patients are unable to adhere to a treatment plan with CPAP and remain – in essence – untreated and exposed to all of the health and social risks of OSA⁴. Studies have found that up to 83% of patients become non-adherent to CPAP use⁴⁵. These patients are of particular concern, since some studies have shown that patients intolerant of CPAP have a 10% increased mortality risk at 5 years when compared to patients with OSA who do adhere to treatment⁶⁷.

Fortunately, the past several years have seen some advancements in Positive Airway Pressure (PAP) technology. Specifically, Auto-titrating machines are now available which continuously respond to airway resistance and auto-adjust the airway pressure delivered. By this continual re-calibration, these newer machines may be more effective and efficient than the traditional CPAP mask. Also available are smaller, more comfortable facial pillows which have been designed to make wearing positive airway pressure masks more tolerable.
In some cases of snoring and OSA an oral appliance may be used for treatment. An oral appliance is an artificial (often plastic or acrylic) device similar in appearance to a mouth-guard [FIGURE 2]. The device is intended to be worn at night during sleep. By moving the lower jaw (mandible) forward, the appliance decreases the likelihood of the oral soft tissues collapsing and obstructing the airway. It is this obstruction that may contribute to snoring and OSA. A second type of oral appliance – a Tongue Retaining Device – applies suction to the tongue at night in order to keep it from falling back in the throat [FIGURE 3].

A 2006 review of 41 studies found mixed results with oral appliances. Only 52% of patients were able to control their OSA with an oral appliance, and oral appliances were found to be less effective than CPAP\(^8\). As with CPAP, it appears that many patients find it difficult to tolerate oral appliances. Patient compliance rates seem to vary in studies, and have been reported to be as low as 25%\(^9\).

The use of oral appliances may have associated complications. Commonly reported minor (often temporary) side effects have been noted to occur in up to 86% of patients. More severe and persistent complications have been noted to occur in up to 75% of patients. Complications/adverse events include TMJ (temporomandibular joint) pain, myofascial pain, dental/tooth pain,
tongue pain, dry mouth, gum irritation, severe gagging, excessive salivation, occlusal/bite changes, and TM joint sounds\textsuperscript{10}.

Figure 2 – A typical oral appliance
It is well-documented that weight gain and obesity can contribute to snoring and OSA\textsuperscript{11, 12}. One study found two-thirds of 1,000 OSA patients to be clinically obese (weight greater than 120\% of ideal)\textsuperscript{13}. It has been demonstrated that increased weight and body mass will lead to alterations in upper airway structure and function which predispose to OSA and snoring\textsuperscript{14, 15}. There exist a large number of studies which support the notion that signs and symptoms of OSA and snoring.
can be improved with weight loss\textsuperscript{16 17 18}. In some patients with significant obesity, surgical intervention (ie-bariatric surgery) may be utilized to help patients with OSA lose weight\textsuperscript{19}. Studies seem to support the efficacy of these interventions, although long-term follow-up data is incomplete\textsuperscript{20 21}.

It is apparent that a patient’s overweight status can play a significant role in his/her snoring and OSA. In addition to the other health benefits of good nutrition and fitness, working towards a healthy weight may have significant benefits for patients with OSA and snoring. It is, therefore, imperative that patients with OSA and snoring examine the status of their nutrition and fitness with an eye towards healthy, balanced interventions.

**ALCOHOL**

Drinking alcohol may cause the soft tissues of the airway to relax and increase the likelihood of soft tissue collapse associated with snoring and sleep apnea. In fact, it the increased rate of sleep apnea in patients who drink has been well documented\textsuperscript{22 23}. Changing drinking habits and patterns, including decreased nocturnal alcohol consumption may have a positive impact on patients’ sleep and snoring signs and symptoms.

**SMOKING**

Several studies have identified smoking as an independent risk factor for snoring\textsuperscript{24}. The relationship between smoking and OSA; however, is less clear. While it is unlikely that smoking directly causes sleep apnea, there is data to suggest that smoking may adversely impact some of sleep apneas more severe side effects such as cardiovascular disease\textsuperscript{25} and pulmonary disease. OSA appears to be more common in heavy smokers.\textsuperscript{26 27}

**ALLERGY TREATMENT**

When inhalant allergies (ie – “hay fever”) affect the nasal passages it is known as allergic rhinitis. The swelling of the nasal lining associated with allergic rhinitis leads to can turbulent airflow with snoring as a consequence. Additionally, several studies have suggested a link between allergic rhinitis and OSA; with allergic rhinitis as a risk factor for OSA\textsuperscript{28 29 30}. This link...
is likely based on the fact that nasal airway resistance accounts for two-thirds of total airway resistance\textsuperscript{31}. When the nasal airway becomes blocked as a result of allergic-swelling, total airway resistance increases. Others have shown improvement in OSA parameters after medical treatment of allergic rhinitis\textsuperscript{32} \textsuperscript{33} \textsuperscript{34}.

For those who would like to acquire more in-depth scientific knowledge about allergy, please visit Chapter 4 of the free on-line textbook – “Diagnosis and Management of Disorders of the Nose and Sinuses.” This book is available at: \url{http://www.noseandsinus.com}. In short, however, it will suffice to say that allergy testing should be part of the evaluation of most patients with complaints of snoring and sleep apnea. Allergy testing is now simple, quick, and easy. While some patients are best tested with standard “prick” testing, many patients can easily be tested with a mere blood test (RAST test).

For those patients who do have allergies, there are many management options available. Oral antihistamines, nasal anti-histamines and nasal steroid sprays – along with several other medicines - are effective options for many patients. These treatments will often improve or control patient symptoms; however, they must be taken on a regular basis as long as the triggering allergen (ie-dust mites, cats, ragweed, etc) is present.

Unlike allergy pills and sprays, immunotherapy is designed to “cure” patients of their allergies. Immunotherapy comes in two forms – allergy shots (SubCutaneous ImmunoTherapy – SCIT) and allergy drops (SubLingual ImmunoTherapy – SLIT). Each of these options has “pros” and “cons.” Allergy shots are effective; however, there is a small but real safety risk. Every year 3-5 people in America will die from an allergy shot. There is also an associated level of inconvenience with allergy shots since most allergists require patients to come in to their office on a weekly basis to have their shot administered. Allergy drops are placed under the tongue 6 days/week. SLIT has been practice with great efficacy in Europe for 40 years and there has never been a documented fatality from an allergy drop. On the other hand, it is often the case that patients will need to take their allergy drops for 6-12 months longer than allergy shots before their allergies have been fully treated.


