SNORING

Snoring

Forty-five percent of normal adults snore at least occasionally, and 25 percent are habitual snorers. Problem snoring is more frequent in males and overweight persons, and it usually grows worse with age.

More than 300 devices are registered in the U.S. Patent and Trademark Office as cures for snoring. Some are variations on the old idea of sewing a sock that holds a tennis ball on the pajama back to force the snorer to sleep on his side. (Snoring is often worse when a person sleeps on his back). Some devices reposition the lower jaw forward; some open nasal air passages; a few others have been designed to condition a person not to snore by producing unpleasant stimuli when snoring occurs. But, if you snore, the truth is that it is not under your control whatsoever. If anti-snoring devices work, it is probably because they keep you awake.

What Causes Snoring?

The noisy sounds of snoring occur when there is an obstruction to the free flow of air through the passages at the back of the mouth and nose. This area is the collapsible part of the airway (see illustration) where the tongue and upper throat meet the soft palate and uvula. Snoring occurs when these structures strike each other and vibrate during breathing.

People who snore may suffer from:

- Poor muscle tone in the tongue and throat. When muscles are too relaxed, either from alcohol or drugs that cause sleepiness, the tongue falls backwards into the airway or the throat muscles draw in from the sides into the airway. This can also happen during deep sleep.
- Excessive bulkiness of throat tissue. Children with large tonsils and adenoids often snore. Overweight people have bulky neck tissue, too. Cysts or tumors can also cause bulk, but they are rare.
- Long soft palate and/or uvula. A long palate narrows the opening from the nose into the throat. As it dangles, it acts as a noisy flutter valve during relaxed breathing. A long uvula makes matters even worse.
- Obstructed nasal airways. A stuffy or blocked nose requires extra effort to pull air through it. This creates an exaggerated vacuum in the throat, and pulls together the floppy tissues of the throat, and snoring results. So, snoring often occurs only during the hay fever season or with a cold or sinus infection.

Also, deformities of the nose or nasal septum, such as a deviated septum (a deformity of the wall that separates one nostril from the other) can cause such an obstruction.

Is Snoring Serious?

Socially, yes! It can be, when it makes the snorer an object of ridicule and causes others sleepless nights and resentfulness.

Medically, yes! It disturbs sleeping patterns and deprives the snorer of appropriate rest. When snoring is severe, it can cause serious, long-term health problems, including obstructive sleep apnea.

Obstructive Sleep Apnea

When loud snoring is interrupted by frequent episodes of totally obstructed breathing, it is known as obstructive sleep apnea. Serious episodes last more than ten seconds each and occur more than seven times per hour. Apnea patients may experience 30 to 300 such events per night. These episodes can reduce blood oxygen levels, causing the heart to pump harder.

The immediate effect of sleep apnea is that the snorer must sleep lightly and keep his muscles tense in order to keep airflow to the lungs. Because the snorer does not get a good rest, he may be sleepy during the day, which impairs job performance and makes him a hazardous driver or equipment operator. After many years with this disorder, elevated blood pressure and heart enlargement may occur.

Can Heavy Snoring be Cured?

Heavy snorers, those who snore in any position or are disruptive to the family, should seek medical advice to ensure that sleep apnea is not a problem. An otolaryngologist will provide a thorough examination of the nose, mouth, throat, palate, and neck. A sleep study in a laboratory environment may be necessary to determine how serious the snoring is and what effects it has on the snorer's health.

Snoring Treatment

Treatment depends on the diagnosis. An examination will reveal if the snoring is caused by nasal allergy, infection, deformity, or tonsils and adenoids.

Snoring or obstructive sleep apnea may respond to various treatments now offered by many otolaryngologist-head and neck surgeons:

- Uvulopalatopharyngoplasty (UPPP) is surgery for treating obstructive sleep apnea. It tightens flabby tissues in the throat and palate, and expands air passages.

- Thermal Ablation Palatoplasty (TAP) refers to procedures and techniques that treat snoring and some of them also are used to treat various severities of obstructive sleep apnea. Different types of TAP include bipolar cautery, laser, and radiofrequency. Laser Assisted Uvula Palatoplasty (LAUP) treats snoring and mild obstructive sleep apnea by removing the obstruction in the airway. A laser is used to vaporize the uvula and a specified portion of the palate in a series of small procedures in a doctor's office under local anesthesia. Radiofrequency ablation-some with temperature control approved by the FDA-utilizes a needle electrode to emit energy to shrink excess tissue to the upper airway including the palate and uvula (for snoring), base of the tongue (for obstructive sleep apnea), and nasal turbinates (for chronic nasal obstruction).

- Genioglossus and hyoid advancement is a surgical procedure for the treatment of sleep apnea. It prevents collapse of the lower throat and pulls the tongue muscles forward, thereby opening the obstructed airway.

If surgery is too risky or unwanted, the patient may sleep every night with a nasal mask that delivers air pressure into the throat; this is called continuous positive airway pressure or CPAP.

A chronically snoring child should be examined for problems with his or her tonsils and adenoids. A tonsillectomy and adenoidectomy may be required to return the child to full health.

Self-Help for the Light Snorer

Adults who suffer from mild or occasional snoring should try the following self-help remedies:

- Adopt a healthy and athletic lifestyle to develop good muscle tone and lose weight.
- Avoid tranquilizers, sleeping pills, and antihistamines before bedtime.
- Avoid alcohol for at least four hours and heavy meals or snacks for three hours before retiring.
- Establish regular sleeping patterns
- Sleep on your side rather than your back.
- Tilt the head of your bed upwards four inches.

Remember, snoring means obstructed breathing, and obstruction can be serious. It's not funny, and not hopeless.

www.entnet.org/healthinformation/
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Sleep Apnea

Sleep apnea occurs when a person's breathing is interrupted during sleep. People with untreated sleep apnea stop breathing repeatedly during their sleep, sometimes hundreds of times during one night.

There are two types of sleep apnea:

- Obstructive sleep apnea (OSA) is caused by a blockage of the airway, usually when the soft tissue in the back of the throat collapses during sleep. This is by far the most common type.
- Central sleep apnea: Unlike OSA, the airway is not blocked but the brain fails to signal the muscles to breathe

Risk factors for Sleep Apnea

Sleep apnea can affect anyone at any age, including children. Risk factors for this sleep problem include:

- Male gender
- Overweight
- Over the age forty
- Large neck size (17 inches or greater in men and 16 inches or greater in women)
- Large tonsils
- Family history of sleep apnea

What Are the Effects of Sleep Apnea?

If left untreated, sleep apnea can result in a number of health problems including:

- Hypertension
- Stroke
- Heart failure, irregular heartbeat, and heart attacks
- In addition, untreated sleep apnea may be responsible for poor performance in everyday activities, such as at work and school, motor vehicle crashes, as well as academic underachievement in children and adolescents.

Sleep Apnea Symptoms

Common sleep apnea symptoms include:

- Daytime sleepiness
- Waking up with a sore and/or dry throat
- Waking up with a choking or gasping sensation

- Morning headaches
- Forgetfulness, mood changes and a decreased interest in sex
- Recurrent awakenings or insomnia

Sleep Apnea Tests & Diagnosis

A sleep study or polysomnogram (PSG) is a multiple-component test that electronically transmits and records specific physical activities while you sleep. Sensors attached to your skin and body record these activities. The recordings are analyzed by a qualified sleep specialist to determine whether or not you have sleep apnea or another type of sleep disorder.

What to Expect

Most commonly a sleep study is done at your own home. A technician will bring the equipment to your home and give you instructions on how to set it up. The set up is easy and the attachments to your skin are not uncomfortable. The technician will pick up the equipment in the morning.

Occasionally a sleep study will be done at a sleep center or hospital. On the night of your sleep study, you will be assigned to a private bedroom in a sleep center or hospital. Near the bedroom will be a central monitoring area, where the technicians monitor sleeping patients.

You will be hooked up to equipment that may look uncomfortable. However, most people fall asleep with little difficulty.

Equipment Used

Surface electrodes will be put on your face and scalp and will send recorded electrical signals to the measuring equipment. These signals, which are generated by your brain and muscle activity, are then recorded digitally. Belts will be placed around your chest and abdomen to measure your breathing. A bandage-like oximeter probe will be put on your finger to measure the amount of oxygen in your blood.

Other Tests and Equipment Used:

- EEG (electroencephalogram) to measure and record brain wave activity
- EMG (electromyogram) to record muscle activity such as face twitches, teeth grinding, and leg movements, and to determine the presence of REM stage sleep. During REM sleep, intense dreams often occur as the brain undergoes heightened activity.
- EOG (electro-oculogram) to record eye movements. These movements are important in determining the different sleep stages, particularly REM stage sleep.
- EKG (electrocardiogram) to record heart rate and rhythm.

- Nasal airflow sensor to record airflow.
- Snore microphone to record snoring activity

Sleep Apnea Treatments

Sleep apnea treatments range from conservative measures such as losing weight to surgery.

Behavioral Modifications:

In mild cases of sleep apnea, conservative therapy may be all that is needed. Conservative approaches include:

- Lose weight
- Avoid alcohol and sleeping pills
- Change sleep positions to promote regular breathing
- Stop smoking. Smoking can increase the swelling in the upper airway which may worsen both snoring and apnea.
- Avoid sleeping on your back

Continuous Positive Airway Pressure (CPAP)

Continuous positive airway pressure (CPAP) is a treatment in which a mask is worn over the nose and/or mouth while you sleep. The mask is hooked up to a machine that delivers a continuous flow of air into the nostrils under positive pressure. The positive pressure from air flowing into the nostrils helps keep the airways open so that breathing is not impaired.

Dental Devices

Dental appliances called mandibular advancement devices (MAD) can be made that help keep the airway open during sleep. Such devices can be specifically designed by dentists with special expertise in treating sleep apnea.

Surgery

If you have a deviated nasal septum, markedly enlarged tonsils, excessive, floppy tissue in the throat, or a small lower jaw with an overbite causing the throat to be abnormally narrow, surgery may be needed to correct sleep apnea.

The most commonly performed surgical procedures for sleep apnea include:

- Nasal surgery: Correction of nasal obstructions such as a deviated septum.
- Uvulopalatopharyngoplasty (UPPP): A procedure that removes soft tissue on the back of the throat and palate, increasing the width of the airway at the throat opening.
- Mandibular maxillary advancement surgery: Invasive surgery to correct certain facial abnormalities or throat obstructions that contribute to sleep apnea.

Other Options: Somnoplasty and Palatal Implants

These procedures are directed at stiffening the palate in order to reduce palate movement that contributes to snoring. Somnoplasty uses radiofrequency energy to create scarring within the palate tissue. Implants are made of biocompatible material and are placed within the deeper tissue of the soft or moveable back part of the palate.

These procedures are not clearly beneficial for sleep apnea except for possible mild cases. The procedures are not covered by medical insurance and will generally cost between $1000 – 2500.

Sleep Apnea - Home Treatment

You can treat obstructive sleep apnea (OSA) at home if you have mild sleep apnea

Home treatment for sleep apnea includes:

- Losing weight. Many people who have sleep apnea are overweight. Loosing even 10 pounds can have a dramatic effect on the severity of sleep apnea.

- Limiting the use of alcohol and medicine. Drinking excessive amounts of alcohol or taking certain medicines, especially sleeping pills or sedatives, before sleep usually makes symptoms worse.

- Getting plenty of sleep. Apnea episodes may be more frequent when you have not had enough sleep.

- Sleeping on your side. Try this: Sew a pocket in the middle of the back of your pajama top, put a tennis ball into the pocket, and stitch it closed. This will help keep you from sleeping on your back. Sleeping on your side may eliminate mild sleep apnea.

- You can try using a special pillow (called a cervical pillow) when you sleep. A cervical pillow can help your head stay in a position that reduces sleep apnea.

- If you are using a continuous positive airway pressure (CPAP) machine to help you breathe, use it every night. If you don't use it all night, every night, your symptoms will return right away.

Sleep Apnea - Other Places To Get Help

Organizations

American Sleep Apnea Association (ASAA)
1424 K Street NW
Suite 302
Washington, DC 20005
Phone: (202) 293-3650
Fax: (202) 293-3656
E-mail: asaa@sleepapnea.org
Web Address: www.sleepapnea.org

The American Sleep Apnea Association provides education and support for people who have sleep apnea.

National Center on Sleep Disorders Research, National Heart, Lung, and Blood Institute, U.S. National Institutes of Health
6701 Rockledge Drive
Bethesda, MD 20892-7993
Phone: (301) 435-0199
Fax: (301) 480-3451
E-mail: ncsdr@nih.gov
Web Address: www.nhlbi.nih.gov/about/ncsdr/index.htm

The Web site for the National Center on Sleep Disorders Research includes current information about the diagnosis and treatment of sleep disorders, fact sheets about various sleep disorders, and links to other organizations to help you find more information. You also can take an interactive sleep quiz.

National Sleep Foundation
1522 K Street NW
Suite 500
Washington, DC 20005
Phone: (202) 347-3471
Fax: (202) 347-3472
E-mail: nsf@sleepfoundation.org
Web Address: www.sleepfoundation.org

The National Sleep Foundation, an independent nonprofit organization, can provide you with brochures on sleep disorders and a list of accredited sleep disorder clinics.

Fact Sheet: Pediatric Obstructive Sleep Apnea

Sleep disordered breathing (SDB) is a common problem for adults leading to hypertension, heart attack, stroke, and early death. Other consequences are bedroom disharmony, excessive daytime sleepiness, weight gain, poor performance at work, failing personal relationships, and increased risk for accidents, including motor vehicle accidents.

Sleep disordered breathing in children, from infancy through puberty, is in some ways a similar condition but has different causes, consequences, and treatments. A child with SDB does not necessarily have this condition as an adult.

Pediatric obstructive sleep apnea

The premiere symptom of sleep disordered breathing is snoring that is loud, present every night regardless of sleep position, and is ultimately interrupted by complete obstruction of breathing with gasping and snorting noises. Approximately 10 percent of children are reported to snore. Ten percent of these children (one percent of the total pediatric population) have obstructive sleep apnea.

When an individual, young or old, obstructs breathing during sleep, the body perceives this as a choking phenomenon. The heart rate slows, the sympathetic nervous system is stimulated, blood pressure rises, the brain is aroused, and sleep is disrupted. In most cases a child's vascular system can tolerate the changes in blood pressure and heart rate. However, a child's brain does not tolerate the repeated interruptions to sleep, leading to a child that is sleep deprived, cranky, and ill behaved.

Consequences of untreated pediatric sleep disordered breathing

- Snoring: A problem if a child shares a room with a sibling and during sleepovers.
- Sleep deprivation: The child may become moody, inattentive, and disruptive both at home and at school. Classroom and athletic performance may decrease along with overall happiness. The child will lack energy, often preferring to sit in front of

the television rather than participate in school and other activities. This may contribute to obesity.

- Abnormal urine production: SDB also causes increased nighttime urine production, and in children, this may lead to bedwetting.
- Growth: Growth hormone is secreted at night. Those with SDB may suffer interruptions in hormone secretion, resulting in slow growth or development.
- Attention deficit disorder (ADD) / attention deficit hyperactivity disorder (ADHD): There are research findings that identify sleep disordered breathing as a contributing factor to attention deficit disorders.

Diagnosis of sleep disordered breathing

The first diagnosis of sleep disordered breathing in children is made by the parent's observation of snoring. Other observations may include obstructions to breathing, gasping, snorting, and thrashing in bed as well as unexplained bedwetting. Social symptoms are difficult to diagnose but include alteration in mood, misbehavior, and poor school performance. (Note: Every child who has subpar academic and social skills may not have SDB, but if a child is a serious snorer and is experiencing mood, behavior, and performance problems, sleep disordered breathing should be considered.)

A child with suspected SDB should be evaluated by an otolaryngologist - head and neck surgeon. If the symptoms are significant and the tonsils are enlarged, the child is strongly recommended for T&A, or tonsillectomy and adenoidectomy (removal of the tonsils and adenoids). Conversely, if the symptoms are mild, academic performance remains excellent, the tonsils are small, and puberty is eminent (tonsils and adenoids shrink at puberty), it may be recommended that SDB be treated only if matters worsen. The majority of cases fall somewhere in between, and physicians must evaluate each child on a case-by-case basis.

There are other pediatric sleep disorder diagnoses. Sudden infant death syndrome (SIDS) and apparent life threatening episode (ALTE) are considered forms of sleep disordered breathing. Children with these conditions warrant thorough evaluation by a pediatric sleep specialist. Children with craniofacial abnormalities, primarily abnormalities of the jaw bones, tongue, and associated structures, often have sleep disordered breathing. This must be managed and the deformities treated as the child grows.

The sleep test is the standard diagnostic test for sleep disordered breathing. This test can be performed in a sleep laboratory or at home. Sleep tests can produce inaccurate results, especially in children. Borderline or normal sleep test results may still result in a diagnosis of SDB based on parental observation and clinical evaluation.

Treatment for sleep disordered breathing

Enlarged tonsils are the most common cause for SDB, thus tonsillectomy/adenoidectomy is the most effective treatment for pediatric sleep disordered breathing. T&A achieves a 90 percent success rate for childhood SDB. Of the nearly 400,000 T&As performed in the U.S. each year, 75 percent are performed to treat sleep disordered breathing.

Not every child with snoring should undergo T&A. The procedure does have risks and possible complications. Aside from the mental anguish experienced by the parent and child, potential problems include: anesthesia risks, bleeding, and infection.

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There is excellent information about sleep apnea and children on the web site of the American Academy of Otolaryngology.
http://www.entnet.org/KidsENT/