

Snoring

Snoring is noisy breathing caused by vibration of the airway walls at the back of the throat (pharynx). This may occur if the walls come close together on inspiration. During inspiration, a negative pressure is generated in the lungs and transferred through to the throat. Normally air is then drawn into the throat and lungs via the nose. The walls of the pharynx tend to collapse in if one or more of the following situations exist:

1. the nasal airway is blocked or partially blocked
 - this means that a greater negative pressure is generated in the throat on inspiration, thereby dragging the pharyngeal (throat) walls inward
2. the tonsils are very large and unhealthy
 - the extra bulk of the tonsils narrows the pharyngeal airway making the pharyngeal airway more prone to collapse
3. the palate is swollen
 - this is a result of snoring, rather than a cause; however if snoring persists and is severe enough, it can lead to permanently thickened tissues, which in turn tend to promote snoring tendencies
4. the back of the tongue is relatively large
 - this may be relative to a slightly small jaw, or due to a generally large tongue. This narrows the airway at that level and the tongue collapsing back tends to narrow the pharynx
5. the muscles of the throat are hypotonic or floppy
 - this occurs after alcohol or sleeping tablets thus increasing any snoring tendency; it also occurs naturally as sleep depth increases
6. the tissues of the throat are generally bulky
 - some hormonal changes can cause this; more commonly it is due to excess weight gain. Fat infiltrates the tongue making the tongue bigger. A large neck also narrow the pharynx.

If the collapse of the airway walls is severe enough the passage may become totally obstructed. These obstructive episodes occur most commonly during the deepest sleep. The passage of air through the throat ceases altogether, causing the snoring to stop until the sleeper has woken sufficiently for the muscles of throat to pull the pharynx open and enable breathing to resume. The first “new” breath is usually a large gasp. This lightening of the depth of sleep is called “arousal”; sometimes a snorer may wake right up.

Video



To download a video of snoring please click on the frame on the right. The picture looks down the pharynx. At 7 o'clock one can see the uvula. In the middle of the picture is the base of tongue with the epiglottis above it. During the video you can see the soft palate, epiglottis and base of tongue vibrating. The base of tongue can be seen collapsing back. When this happens completely during sleep, apnoea occurs.

Habitual snoring is associated with a poor quality of sleep; most snorers fall asleep readily yet wake up tired in the morning despite having 8 hours or more hours sleep, because they have not had sufficient REM sleep to "recharge their batteries". The obstructive breathing episodes can become quite frequent, leading to "obstructive sleep apnoea" or OSA. OSA may lead to heart rhythm and blood pressure problems and can cause early morning headaches. Any snorer may convert or progress to OSA especially after drinking alcohol (usually a temporary effect), or after putting on weight.

Assessment Of Habitual Snorers

Clinical examination is directed at assessing the patency of the nasal airway, and the collapsibility of the pharyngeal airway. This is done by passing a flexible telescope through your nose after the application of local anaesthetic. If OSA is likely, then a formal sleep study should be performed to measure the severity of the breathing disorder before definitive treatment is planned. There are a variety of ways a patient can be assessed for OSA. It is possible to do a study in the home environment or in a formal sleep laboratory. Severe OSA requires special consideration.

Treatment Of Habitual Uncomplicated Snoring

1. Weight loss is important; so is reducing alcohol intake. The former reduces the bulk of the walls of the airway and the tongue; the latter avoids excessively floppy airway muscles.
2. An adequate nasal airway is required to prevent excess "drag on the walls of the throat when breathing in. This may still not be sufficient to stop snoring, and is only occasionally enough to prevent snoring. Nasal surgery(septoplasty and trimming of nasal turbinates) may be

necessary to obtain sufficient or long term improvement. Occasionally nasal splints are appropriate, if the nasal valve area is the principle source of airway obstruction. The scientific evidence indicates that a good nasal airway promotes continuous positive airway pressure (CPAP) use. CPAP is discussed later.

3. If snoring persists despite (1) & (2) above, palatal surgery can tighten the tissues of the palate preventing palatal flutter and collapse at this level. A number of methods are available from surgery (uvulopalatoplasty), and radiofrequency surgery (somnoplasty). Modern palatal surgical techniques, particularly when combined with tongue coblation are now more effective than they were a decade ago.
4. Coblation tongue surgery is a means of causing a reduction in the size of the tongue, so that it may collapse back less into your upper airway at night and thus, improve your snoring and if you have it OSA. The procedure is an easily tolerated procedure with most patients having minimal side-effects. The procedure is generally performed under a general anaesthetic and a small needle is placed into the middle 1/3rd of the tongue in the midline and other areas in the rear of the tongue, to cause shrinkage and tightening of the tongue.
5. Non-surgical measures to prevent airway obstruction (and snoring) can also be tried. These involve the use of special devices:
 - i. CPAP: This is a small mask which fits over the nose and is attached to a pump which delivers a continuous flow of air through the nose under pressure, preventing collapse of the airway while breathing. It can take a while to get used to the idea of breathing out against the pressure of the machine. There are also problems with patients complaining of nasal dryness while using CPAP machines.
 - ii. Mandibular Splint: This dental device holds the jaw forward while sleeping, pulling the tongue away from the back of the throat, thus preventing airway collapse, the same effect can be created by performing jaw surgery.
 - iii. Snore ball: It is possible to sew a tennis ball into the back of your pyjamas or to wear a belt with a ball on it. The latter is available commercially. This makes the user sleep on his side and can reduce snoring intensity.