Article Feature:
Snoring and Obstructive Sleep Apnoea

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What is Snoring?

Snoring is the sound caused by the vibration of the walls of the air passages and throat when it partially collapses during sleep. In people who snore, the upper airway is narrow. When awake, the airway muscles keep the air passages open but during sleep, the muscles surrounding the air passages relax and it narrows further causing collapse. Intermittent collapse while breathing produces vibration and this is heard as snoring. Snoring can be disturbing and cause sleep disturbance to sleeping partners. It can also cause social problems and embarrassment. Snoring when associated with choking, unrefreshing sleep, daytime sleepiness or fatigue is a symptom of Obstructive Sleep Apnoea (OSA).

What is Obstructive Sleep Apnoea (OSA)?

Apnoea is Latin for cessation of breathing. OSA is a condition where there is repeated upper airway closure during sleep. This causes breathing to stop and Oxygen levels to drop. This is sensed by the brain which needs to wake up temporarily to open the airway to breathe before falling back to sleep again. On returning to sleep the obstruction occurs again and this cycle repeats. This causes poor sleep quality and unrefreshing sleep. Snoring without significant stopping of breathing is called simple or primary snoring.

What are the causes of Snoring and OSA?

There are multiple causes of a narrow airway and OSA. Some factors such as unfavourable and narrow shape of the facial bones may be inherited but others may develop over time and this may include nasal problems that narrow the nose passages, tonsils and adenoid enlargement or obesity. Aging also predisposes to snoring due to laxity of the tissues in the air passages causing increased collapsibility. Alcohol and certain medications like morphine or sleeping pills also increase the laxity of the air passage.
The air passage is narrow at more than 1 place in most people with OSA. In other words, this is a multi-level problem and to solve it, all the sites of narrowing must be widened. This is important to understand when considering surgery.

What are the symptoms of OSA?

There are many symptoms associated with OSA and not all patients have all the symptoms. In fact some patients with severe OSA may even have very few symptoms. Most of these symptoms are also not exclusive to OSA, there can be overlap of these symptoms with other conditions.

Daytime symptoms include:

- Unrefreshing sleep,
- Waking up with a dry mouth or throat
- Waking up with a headache.
- Daytime sleepiness

Night time symptoms include:

- Loud snoring which may disturb sleeping partners
- Frequent awakenings from sleep
- Frequent trips to the toilet to pass urine
- Insomnia in the middle of the night

Using symptoms alone to diagnose OSA is inaccurate but it does raise the suspicion of the condition. It is therefore important to do sleep studies to confirm OSA.

What are the consequences of untreated OSA?

Untreated OSA increases your risk developing high blood pressure, heart disease and Stroke. Excessive sleepiness may predispose to accidents in the workplace if one is operating heavy machinery or on the road if one is driving. Snoring by itself is not dangerous, however it may create social problems and cause sleep disturbance to the sleeping partner.

Do children snore too? Can children have OSA?

Children can develop OSA as well. The most common causes are enlarged tonsils and adenoids and uncontrolled nasal allergy. Symptoms in children may be different from adults. Children with OSA may be hyperactive in the daytime and have poor concentration in school. They may sweat during sleep, mouth breathe or have restless sleep.

How is Primary Snoring and OSA diagnosed or confirmed?

OSA can be suspected if you have symptoms described above. A diagnosis of OSA is made by doing an overnight sleep study. There are different types of sleep studies available and the most accurate types will include wires on the head to monitor brain waves, eye movements and muscle activity. During this study, there are other wires on the body record the breathing pattern, heart rhythm, Oxygen level, sound and body movement.

How is Snoring and OSA treated?

There are multiple treatment options for OSA and snoring. Unfortunately there is no medication to cure this problem and no ideal treatment for all patients as all options have varying success rates and different potential side effects. In other words, there is no one size fits all solution. There are many types of treatments available

and these can be divided into Lifestyle Modifications and Specific Therapy. The most suitable treatment method (or methods, as some may need to be combined) has to be decided with your doctor taking into account your preferences, severity of your symptoms or sleep apnoea and effectiveness/side effects of treatment method.

What kind of lifestyle changes can be done?

Behavioural and lifestyle measures like losing weight if one is obese or stopping smoking are part of the management of OSA and snoring. Other measures include avoidance of alcohol as this depresses the airway muscle function. Regular sleeping schedules and avoiding sleep deprivation can also be helpful.

Different sleeping positions may affect snoring. Sleeping on the back may make snoring and OSA worse, therefore sleeping while lying on the side may improve this. However this may not true for everyone. A sleep study should be able to tell if a change in sleeping position will make any difference to the snoring and OSA.

What are the specific therapies for snoring and OSA?

On top of lifestyle changes and behavioural measures, the specific treatment options include Continuous Positive Airway Pressure therapy (CPAP), dental splints or surgery. These 3 treatment options work by various means to prevent the collapse of a narrow airway. CPAP and dental splints are non-invasive forms of treatment.

CPAP is positive pressure delivered by a machine that blows out air (like a reversed vacuum cleaner) and is connected to a hose and mask that is worn during sleep. The air pressure can be regulated and some CPAP machines have an automatic titrating function that will adjust the pressure according to need. Positive air pressure works by stenting the airway open thus preventing collapse, snoring and stoppage of breathing. There may be mild side effects from CPAP use like dry mouth or throat, blocked nose or ears and minor skin ulcers. Some patients may find CPAP use difficult to tolerate but those who are compliant with CPAP can have their OSA and snoring well controlled.

Dental (mandibular) splints are devices that protrude the lower jaw (mandible) by keeping the lower teeth in a more forward position. This splint is also worn during sleep. By maintaining the lower jaw in a protruded position it enlarges the air space behind the tongue and puts the air passage tissues in greater tension. This decreases the tendency for the airway walls to collapse. Side effects from dental splints can include excessive salivation during sleep, jaw opening problems and malocclusion. Success rates for the use of dental splints may vary and may be less successful for those who are obese, elderly and have severe OSA. More on dental splints can be read here.

There are many types of surgery for the treatment of snoring and OSA.

What is important to understand about surgery is not the different surgical techniques involved but when and why you should consider surgery. This is because surgery may not be suitable for everyone and may involve risks and result in potential side effects.

The reasons you consider surgery are as follows:

1. When there is a simple obstruction in the airway that can be solved with simple surgery to give a high rate of cure, surgery should be done early. An example of this would be most children who usually only have large tonsils or adenoids blocking the air passage. Removal of the tonsils and adenoids is a fairly simple procedure and this will give a high chance of cure.

2. When there is upstream obstruction in the airway that interferes with non-invasive treatment. An example of this is severe nasal obstruction that prevents CPAP or dental splint use. Surgery to the nose can help to open up the obstructed part to enable better treatment. As there are other parts of the air passage which are narrow that have not been widened with nose surgery, the OSA will unlike be cured.

3. When there is failure of non-invasive treatment.

As there may be several points of narrowing in the air passage; the common sites of narrowing include the nose, tonsils, soft palate, back of tongue and sides of the throat. Surgery works by removing or repositioning tissues in or around the airway to enlarge it. As there are multiple areas of narrowing, multiple surgical procedures may be needed.

These procedures may be performed on the tonsils, soft palate, nose, tongue or jaws. In addition to surgery done under general anaesthesia, there are also minimally invasive surgical procedures like radiofrequency treatment and implants to the palate that can be performed under local anaesthesia but these procedures are more effective for primary snoring and mild OSA. Success rates and potential complications for surgery vary depending on the surgery, severity and site of obstruction. There is no data on how long successful surgical treatment lasts. Relapse of symptoms over time after successful treatment is variable and is usually due to worsening of the OSA due to weight gain or increasing age.

What is the aim of treatment?

There are several aims of treatment which may vary from person to person. These include reducing or stopping the snoring, preventing co-morbidities of untreated OSA (like high blood pressure, heart disease and strokes) and to improve sleep quality and daytime functioning.