



National University
Hospital



Obstructive Sleep Apnoea (OSA)



What is Obstructive Sleep Apnoea (OSA)?

OSA is a sleep-related breathing disorder that involves a reduction or cessation of airflow despite efforts by the body to breathe. It occurs when muscles of the upper airway relax during sleep, causing soft tissue at the back of the throat to collapse and block the airway. These breathing interruptions usually last between 10 to 30 seconds, but some may last for over a minute. Oxygen levels in the blood may fall during these episodes. The brain will try to wake the body up by causing a brief arousal which restores normal breathing. This can occur hundreds of times in one night, resulting in fragmented and poor sleep.

The severity of OSA is measured by the apnoea-hypopnoea index (AHI), which represents the average number of apnoeas and hypopnoeas (breathing interruptions) per hour of sleep. This is measured during an **overnight sleep study ("polysomnogram")** that is conducted in hospital or at home.

Approximately one in three Singaporeans is estimated to have moderate to severe OSA. Symptoms suggestive of OSA include loud snoring, choking or gasping during sleep, excessive daytime sleepiness, frequent urination at night, and hyperactivity in children.

Who is at risk of OSA?

- People who are overweight (BMI>23)
- Middle-aged and older men, post-menopausal women
- Children/adults with large tonsils
- Anyone who has a family history of OSA
- Patients with nocturnal nasal congestion



What are the effects of OSA?

- High blood pressure
- Increased risk of stroke and heart disease
- Impaired glucose tolerance and insulin resistance
- Impaired concentration and poor work/school performance
- Mood changes and irritability
- Increased risk of being involved in a motor vehicle accident
- Bed partner having disturbed sleep



How is OSA treated?

+ Non-Surgical Options



Continuous positive airway pressure (CPAP)

CPAP is the gold-standard treatment option for moderate to severe cases of OSA worldwide. It provides a stream of pressurised air to patients through a mask that they wear during sleep. This prevents collapse of the upper airway and restores normal oxygen levels. Different shapes and sizes of masks are available to fit the preferences of the patient.



Mandibular advancement device (MAD)

This treatment is generally more effective for patients with mild to moderate OSA. Worn during sleep, the upper airway is stabilised as the lower jaw is maintained in a forward position. A dentist will customise the device for the patient.

+ Surgical Procedures

Surgery can help to treat OSA, especially if a patient cannot tolerate CPAP. Surgery widens and/or stiffens the upper airway to prevent airway vibration and closure during sleep. Examination with a flexible nasoendoscope (camera) is performed before surgery to determine which areas of the airway are narrow.

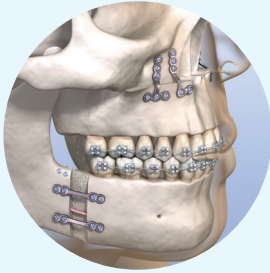
Different types of surgery will be recommended depending on the patient. These are some examples of surgery that may be suitable:



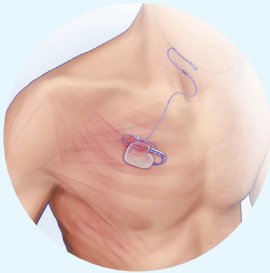
Tonsillectomy and/or uvulopalatopharyngoplasty (UPPP) can increase space at the back of the mouth.



Nasal surgery can improve nasal breathing during the day and/or night.



Patients with small jaws can benefit from skeletal surgery known as maxillomandibular advancement (MMA). This brings the jaws into a more forward position, increasing airway size and stabilising the throat muscles.



The tongue is a major cause of airway obstruction in many patients. Hypoglossal nerve stimulation (HGNS) is an effective method of addressing tongue collapse. A small device is implanted in the chest and neck, and can be controlled by the patient. It enlarges the airway by stimulating the tongue to move forward during sleep.



What else can I do to improve my OSA?

- **Weight loss** for overweight patients can reduce bulky soft tissue in and around the airway
- **Nasal medications** may help patients with nasal congestion
- **Positional therapy (sleeping on your side)** is especially useful for patients with mild OSA, or those with proven improvement in airflow during side sleep



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