

WHAT IS SNORING?

- Snoring is noisy breathing related to obstruction and collapse of the upper airway when asleep

WHAT IS THE DIFFERENCE BETWEEN SNORING AND SLEEP APNOEA?

- Most of us will snore at times, and this may not be medically significant.
- Sleep apnoea occurs when the degree of airway blockage is severe to the level where it blocks completely during deep sleep
- If this occurs frequently, sleep quality will be very poor leading to issues including:
 - unrefreshing sleep
 - daytime tiredness
 - falling asleep during the day
 - poor concentration
- In the most severe cases there may be:
 - respiratory issues
 - strain on the heart
 - risk factor for coronary artery disease

WHAT ARE THE CAUSES OF SNORING, AND OBSTRUCTIVE SLEEP APNOEA?

- Lifestyle
 - Obesity
 - Excess fat deposits in the neck, and around the throat compress the airway, causing snoring
 - Alcohol
 - Sedatives (such as benzodiazepines)
 - Alcohol and sedatives relax the muscles in the neck which normally keep the airway open
 - This can predispose to obstruction when asleep
- Anatomical factors
 - Nasal obstruction
 - Large tonsils
 - Prominent/ floppy soft palate
 - Large tongue relative to mouth/ throat
 - Underdeveloped lower jaw
 - Narrow hard palate (pushes tongue down and back)
- Age

- Like elsewhere in the body, the muscles and soft tissues around the throat become more floppy
- It is generally more common to snore, the older we get



MR. PICKWICK.

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Figure 1: Mr Pickwick a character of Charles Dickens. He had features consistent with severe obstructive

sleep apnoea in the story, and gave rise to the term Pickwickian Syndrome. This describes severe breathing and sleep disorders in the severely obese. It is usual that someone who is as overh=weight as the image we see will snore. Without losing weight, all other treatments are bound for failure

MY PARTNER HAS TOLD ME I SNORE. SHOULD I BE WORRIED?

- **Simple snoring** (without sleep apnoea) is a social rather than a medical concern.
- There is no direct concern to your physical health, but clearly it can put a strain on relationships.
- If your partner's sleep is not too affected, if they are happy with earplugs, or occasionally sleeping in separate rooms, further treatment may not be necessary
- If the snoring is causing major disruption to your social situation, or if there is a concern about **sleep apnoea** (stopping breathing) or poor sleep quality, specialist assessment by an ENT surgeon or sleep respiratory sleep specialist should be considered, with a view treatment should be considered

WHAT IS THE ASSESSMENT PROCESS FOR SNORING?

- The key issues are:
 - How loud is the snoring?
 - Is there likely sleep apnoea, and if so how severe?
 - Is there any evidence of impact on your overall health?
 - What is the likely cause of snoring?
 - Is there an easy treatment for the snoring?
 - How strongly do you (or your partner) wish to pursue treatment?

HISTORY

- A detailed history is taken from you (and if present, your partner) covering:
 - Duration of snoring
 - Pattern of snoring
 - Sleep quality, daytime tiredness
 - Observed sleep apnoeas
 - Nasal obstruction
 - Tonsillitis
 - Prior medical assessments and treatments
 - Lifestyle
 - Smoking
 - Drinking
 - Benzodiazepines (such as Valium or Temazepam)
 - General medical conditions
 - A discussion of how concerned you (and your partner) are

EXAMINATION

- Weight, body mass index
- Jaw/ neck structures
- A small lower jaw of a short full neck make snoring more likely



Figure 2: A patient presenting with sleep apnoea. There is retrognathia (small lower jaw), and a loss of the normal division between the front of the neck, and the area under the lower jaw (the cervicomental angle). This abnormality often pushes the tongue towards the back wall of the throat in sleep, causing snoring and sleep apnoea. It can be seen even in a fit person of ideal weight. It may be treated with a mandibular advancement prosthesis, tongue base reduction surgery, or in some cases jaw surgery. In severe cases, CPAP remains the gold standard.

- Mouth opening, Size of tongue, View of Throat on mouth opening (Mallampati Score)

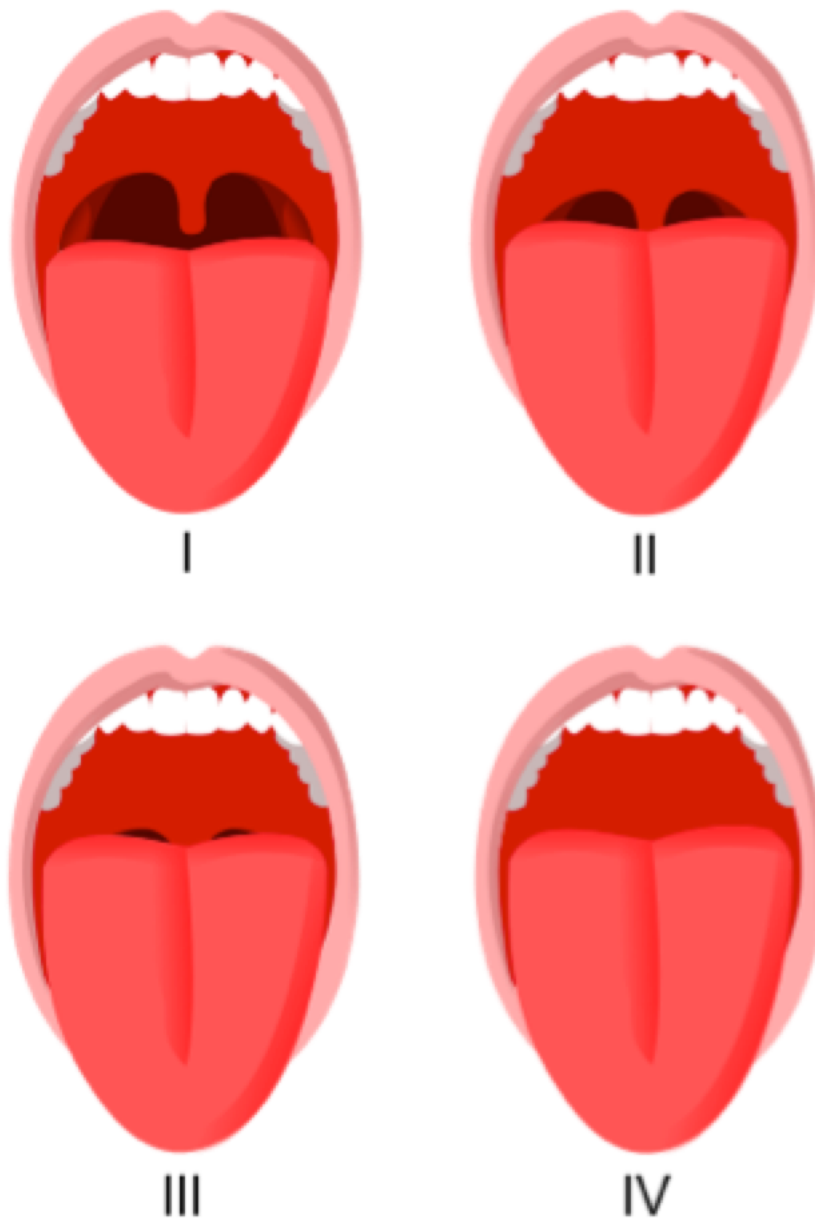


Figure 3: The Mallampati score. The higher score, the more space the tongue takes up in the mouth and throat, and the more likely the patient is to snore. This is a common factor in adult snoring. (Images by Jmarchn - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=12842847>)

- Nasal structural examination
 - Septal deviation, nasal asymmetry, nasal collapse

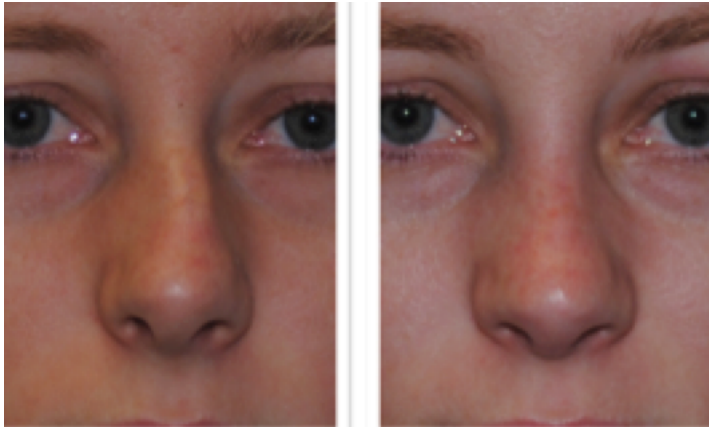


Figure 4: a significant nasal deviation like this (before and after Rhinoplasty surgery by Dr Smith) is always associated with septal deviation, which in turn is likely to be associated with snoring and poor sleep quality

- Turbinate Swelling, and response to nasal decongestant spray

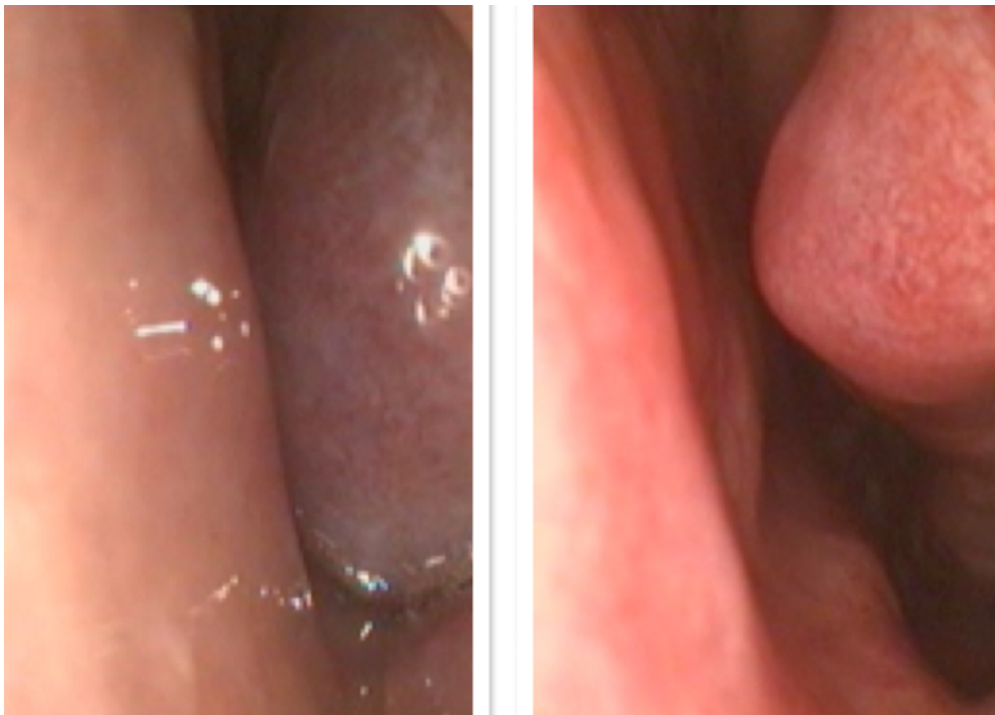


Figure 5: severe swelling of the turbinates as above can cause snoring. Treatment of this can be curative of snoring. In selected patients, simple treatments with nasal allergy spray can be miraculous. In others, surgical treatment of the turbinates can give a great result

- Nasal polyps

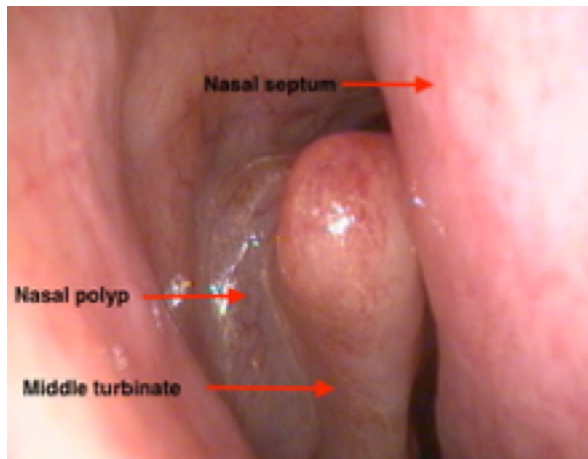


Figure 6: shows significant nasal polyps can impinge the nasal airway. This is associated with nasal blockage, and reduced sense of smell, and often snoring. Treatment of severe nasal polyps can be curative for snoring in selected patients.

- Adenoids

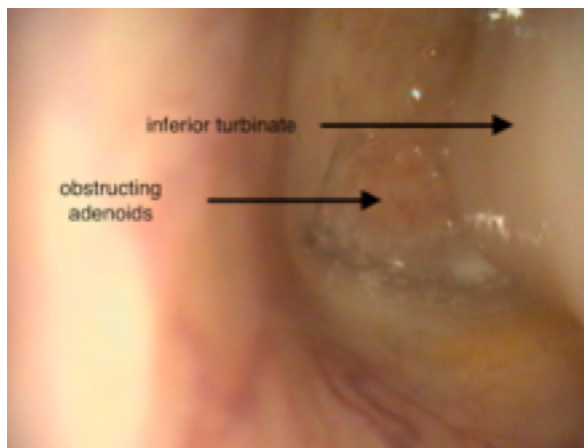


Figure 7: here adenoids completely block the back of the nose. This is more common in young children, but can be seen in adults, and can cause severe snoring and sleep apnoea. Removal of adenoids like this can give a complete cure for snoring.

- Large tonsils
 - Big tonsils can cause severe snoring and sleep apnoea
 - Fortunately, this is very simple to treat, with removal of the tonsils



Figure 8: very large tonsils such as this are almost always associated with severe snoring and sleep apnoea. Fortunately, removal of the tonsils is likely to give a complete cure.

- Nasendoscopic view of throat
 - Size of airway/ obvious narrowing
 - Position of tongue base
 - Dynamic manoeuvres (such as resisted sniffing), to try to replicate which part of the airway may be collapsing when asleep

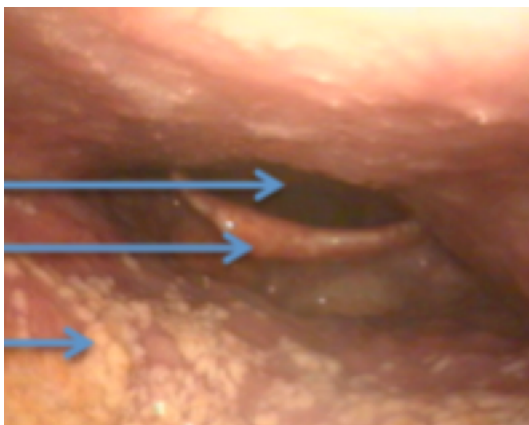


Figure 9: This patient had severe sleep apnoea related to the relative size of his tongue in relation to his mouth and throat. The airway behind the tongue is very narrow even when fully awake, and sitting upright. Clearly, this airway would be even worse when lying on his back (gravity effect), and when asleep (relaxation of muscles splinting the airway open). CPAP (a pressure mask) is likely to give a great result in this patient.

SPECIAL INVESTIGATIONS

- CT Scan
 - Tells us if sinus issues are contributing to the snoring
- Sleep study

- Fortunately it is now possible to get reliable information for the majority of people with a home-based sleep study (as opposed to having to stay overnight in a hospital or sleep clinic)
- This requires referral to a sleep/ respiratory physician
- If significant sleep apnoea is diagnosed, or if there are no anatomical features that may be possible to reverse with surgery, a post sleep-study consultation with the respiratory physician is appropriate, to advise whether non surgical treatment such as CPAP, or a mandibular advancement prosthesis is appropriate

WHAT IS THE TREATMENT AVAILABLE FOR SNORING?

- The pathway of treatment will depend upon the information from the detailed history, examination and special investigations as listed above
- How necessary treatment is will depend on:
 - Whether there is poor sleep quality or sleep apnoea
 - How concerned you or your partner are
 - How acceptable non surgical treatment is to you
- Non surgical treatments are easier to justify than surgical intervention. They include:
 1. Nasal allergy spray
 2. Mandibular advancement prosthesis
 3. CPAP mask
- Surgical treatment is easier to justify if there are other symptoms (apart from snoring) that are likely to be helped, for example:
 - Blocked nose
 - Tonsillitis
- Some anatomical situations causing snoring are relatively easy to fix with surgery, and some are more difficult. It is easier to justify surgery when there is a higher likelihood that it will provide a cure.
 - *Very likely to help*
 - Treat blocked nose
 - Remove large adenoids
 - Large tonsil
 - Very long or floppy palate
 - *Less likely to help*
 - Significantly overweight
 - Short, full neck
 - Small lower jaw
 - Big tongue relative to mouth/ throat

WHAT ARE THE NON-SURGICAL TREATMENTS FOR SNORING/ SLEEP APNOEA?

- CPAP remains the gold standard for sleep apnoea treatment

- Whilst CPAP sounds invasive, the improvement in sleep quality, energy and enjoyment of life in general is so great that many patients not only tolerate their CPAP mask, they feel they can't do without it



Figure 10: A diagram showing a CPAP mask in use.

<https://upload.wikimedia.org/wikipedia/commons/thumb/7/7f/CPAP.png/280px-CPAP.png>

- Nasal allergy spray
 - In selected cases, this will have a great result in helping nasal obstruction and associated snoring
- Nasal device
 - A prosthesis such as Airmax nasal valve dilator may be used to stop the nose from collapsing when asleep
- Mandibular advancement prosthesis
 - If the lower jaw is pulled forward, the back of the tongue is pulled forward opening the airway behind the tongue when asleep
 - This prosthesis is based on the concept that the upper jaw is a stable anchoring point; using a bivalve mouthguard, it is possible to pull the lower jaw forward
 - It is well tolerated by many, and is better tolerated by some than CPAP.
 - It is particularly effective when the point of narrowing of the airway is related to the back of the tongue taking up “too much space”.
 - It is important to see a qualified sleep dentist, to make sure that you get a prosthesis that is likely to work.
 - The prosthesis is not not cheap, but given that it can have great results, and that there are no major risks, it is often worth trying
- Positioning when asleep
 - For many people, snoring is worse when lying on their back.
 - Sometimes a conscious decision to sleep on your side can be helpful.
 - It is possible to use tricks such as sewing a tennis ball into the back of your pyjama to to discourage sleeping on your back
- Weight loss
 - This is key for patients who are significantly overweight.

- It may help for some patients to lose weight, even if they are only mildly overweight.
- If the onset of snoring closely relates to putting on weight, it becomes clear that losing weight will be a big part of the answer.
- Losing substantial weight through diet and exercise is possible with determination, but is notoriously difficult.
- There is an emerging role for bariatric (weight loss reduction) surgery for snoring in the severely overweight patient.
- Reduction or cessation of alcohol or sedatives

WHAT ARE THE SURGICAL TREATMENTS FOR SNORING?

- Nose
 - Septoplasty/ Rhinoseptoplasty
 - Restore symmetry to the nose, and improve airway calibre
 - Treatment of the turbinates
- Adenoidectomy
- Endoscopic Sinus Surgery
- Throat
 - Tonsillectomy
- Treatment of Palate
 - Coblation of Soft Palate
 - Uvulopalatopharyngoplasty
 - Aggressive palate reduction is an old- fashioned approach
 - The length/ bulk of the palate is not often the main factor in snoring.
 - There is a role for less aggressive palate surgery (modified UPPP) as an adjunct to other treatments
- Back of tongue
 - Tongue Base channelling (coblation)
 - Formal tongue base reduction Surgery
- Jaw surgery/ orthodontics
 - Some patients with severe underdevelopment of the jaw, or with a very narrow palate can have great results with dental treatment

WHAT ARE THE RESULTS OF SNORING SURGERY?

- The results are varied because there are so many different factors that can contribute to snoring
- It is usually possible to predict the likely result of surgery preoperatively, based on the position of airway abnormalities observed and their severity
- Some factors are easy to treat:
 - If snoring relates mainly to blocked nose, or big tonsils, results are very good
 - Snoring related to a prominent soft palate is relatively straightforward to treat, and will give good results with carefully selected patients

- Some factors are more difficult to treat:
 - Prominent tongue base
 - This common problem has traditionally been difficult to treat
 - Fortunately, new technology is making treatments easier to tolerate, and more effective
 - Jaw/ Orthodontic treatments
 - This can range from braces palate expansion through to major maxillofacial surgery
 - Maxillofacial surgery for snoring is not to be undertaken lightly, but can have spectacular results
 - If appropriate, Dr Smith will make an onward referral to an orthodontist or a maxillofacial surgeon

WHAT ARE THE RISKS OF SURGICAL TREATMENT FOR SNORING?

- Anaesthetic issues and post-operative apnoeas
 - Patients with significant sleep apnoea may need postoperative ICU monitoring, and in rare cases, perioperative CPAP
- Bleeding related to nose or throat surgery
- Failure to get the desired improvement/ requirement for CPAP despite surgery
- If booking surgery, Dr Smith will have a detailed discussion with you about these, and other risks specific to your case.

WHAT IS FLEXIBLE NASENDOSCOPY?

- This investigation allows a detailed assessment of the nose, sinus area, adenoid area, throat and voice box.
- Cophenylcaine (a local anaesthetic/ decongestant) is squirted in the nose.
- The spray has a bitter taste, and makes the mouth and throat numb for half an hour or so.
- A fine, soft and flexible telescope is passed into the nose, and allows a detailed view of the sinus and adenoid areas, the throat, and the voice box.
 - Photos/ videos are taken of any abnormal findings, and can be shared with you by email/ USB drive if you wish
- There is typically no pain with this examination.
- If the nose feels a lot clearer after cophenylcaine, it is likely that enlarged turbinates are a significant cause of the blockage

I HAVE READ IN THE NEWSPAPER ABOUT OUTPATIENT TREATMENTS TO MY PALATE THAT WILL CURE MY SNORING. IS THIS WORTH TRYING?

- These treatments are mainly targeting the soft palate.
- Treatment of the soft palate without addressing other issues would be expected to work only a small minority of patients
- If you are seeing someone to guide surgical treatment for snoring, it is worth ensuring that they are qualified ENT surgeons, or that they have an equivalent level of qualification in related specialties (such as oromaxillofacial surgery)

CAN I HAVE MY SNORING ASSESSMENT AND TREATMENT IN THE SUTHERLAND SHIRE, OR KOGARAH/ ST GEORGE AREAS?

- These areas are well serviced with ENT surgeons, sleep physicians, sleep dentists, orthodontists and oromaxillofacial surgeons
- Dr Smith is able to see you in a local practice, and arrange treatment as appropriate at Kareena or St George Private Hospitals, or in the public system at Sutherland Hospital