

## **WHAT IS SNORING?**

- Snoring is noisy breathing related to obstruction and collapse of the upper airway when asleep
- In children the common causes are:
  - Large tonsils
  - Blocked nose from large adenoids
  - Blocked nose from allergy/ hay fever
  - A combination of any of the above factors

## **WHAT IS THE DIFFERENCE BETWEEN SNORING AND SLEEP APNOEA?**

- Most kids 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
  - poor concentration
  - behavioural issues
- In the most severe cases there may be:
  - delayed growth
  - respiratory issues
  - strain on the heart

## **IS IT NORMAL THAT MY CHILD SNORES?**

- Gentle, or occasional snoring may not be an issue
- Sometimes when children have snored loudly for a long time, parents become so accustomed as to think it is normal.
- When a child with sleep apnoea has had treatment such as adenotonsillectomy, parents often realise with hindsight how bad the problem had been before.
- Parents often comment that they need to go into the child's room soon after the surgery to see if they are still breathing, as they are not used to it being so quiet.

## **WHAT ARE THE EFFECTS OF SLEEP APNOEA FOR MY CHILD?**

- Children may be tired during the day, with poor concentration, learning and behavioural issues.
- They may fail to grow at the expected rate, due to the energy expenditure of breathing when asleep ("like running a marathon every night").
- In the most severe cases, they may develop respiratory issues, and strain on the heart.

## **WHAT ARE THE SYMPTOMS OF SLEEP APNOEA?**

- If a child has severe snoring and obstruction when asleep their sleep will be fragmented and unrefreshing.

- Parents often say that their child “snores like an old man”.
- Parents are often worried when they hear their child stop breathing, and can sit up watching, worried that they “might not make it through the night”.
- Sleep is not only poor for the child but can be poor for the whole family.
- There may be daytime sleepiness, poor concentration and behavioural issues

### **WHAT CAN BE DONE FOR SLEEP APNOEA IN CHILDREN?**

- A lot of kids snore, but this is not always a medical problem.
- If the degree of obstruction is not severe, or if the problem is only occasional treatment may not be required.
- Dr Smith has extensive training and experience in children’s ENT and is able to determine whether your child is likely to require treatment through a combination of thorough history taking, and examination.
- When it is not possible to determine if sleep apnoea is an issue from the history and examination, a sleep study will be required.
- In this instance I will make a referral to a local sleep paediatrician for assessment towards a sleep study.

### **HOW IS THE CHILD WITH POSSIBLE SLEEP APNOEA ASSESSED?**

- History
  - There is usually a clear history of snoring, and sometimes sleep apnoea, where parents notice their child stop breathing.
  - Dr Smith gets a feel for the degree of your concern about your child’s sleep quality.
  - You will be asked about daytime tiredness, poor behaviour, poor concentration in your child.
  - We will discuss other associated ENT problems, and general medical and developmental issues
- Examination
  - mouth breathing
  - large tonsils
  - nasal mucus
  - nasal allergy
  - large adenoids (seen with nasal endoscopy)
  - noisy breathing / “snoring when awake” in severe cases



Figure above: large tonsils in a child with sleep apnoea

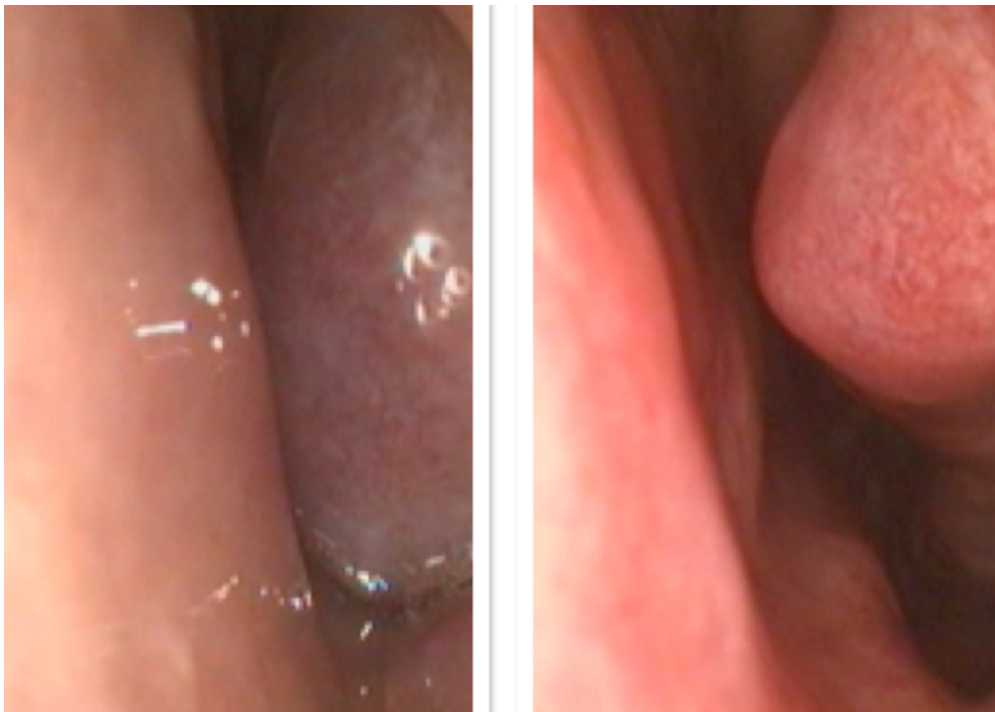


Figure above: **Left**- Obstructing allergic turbinate with complete nasal airway obstruction. **Right**- The same patient after a good response to a nasal decongestant spray, with improved nasal airway. This effect can sometimes be achieved with a nasal spray such as Naosonex or Avamys. If the spray does not give this response, it can be achieved with surgery.

## INVESTIGATION

- Nasal endoscopy
  - A fine and soft telescope is used to look in the back of the nose after a few sprays of local anaesthetic
  - The spray has a bitter flavour, but the examination with the telescope is well tolerated by the majority of children down to the age of 2, and sometimes younger.

- If the telescope is not tolerated, we can make a referral for adenoid X-ray, which shows whether the adenoids are a significant cause of blockage.
- It is not always necessary to examine the adenoids if it is already clear that surgery is necessary for severe sleep apnoea.

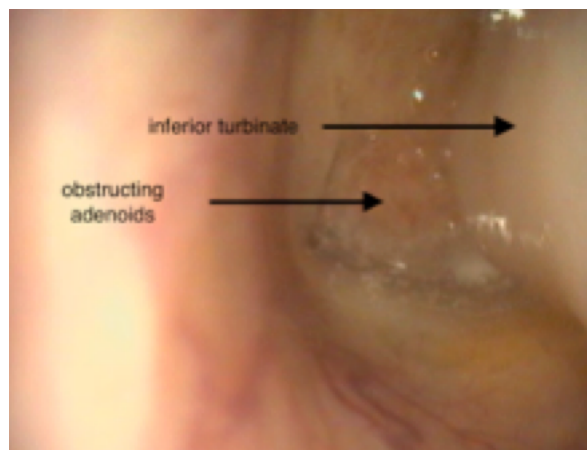


Figure (above): Very large adenoids causing complete nasal obstruction.

- Sleep study
  - If it is unclear how much of a problem there is from the available history and examination, a referral to a sleep paediatrician in the local area may be made for a sleep study
  - We will catch up after this investigation and discuss whether there is a role for further ENT treatment

## WHAT ARE THE TREATMENTS FOR SNORING AND SLEEP APNOEA IN KIDS?

- With Dr Smith's extensive training and experience in paediatric ENT, it is possible to identify which kids need treatment for their snoring, and how extensive the treatment needs to be.

### NON-SURGICAL TREATMENT FOR SNORING

- Nasal spray- topical corticosteroid (e.g. NASONEX, AVAMYS) and saltwater spray (FESS, STERIMAR) can help.
- In some kids the response may be dramatic, with a clearer nasal airway and complete improvement in the snoring, meaning that no further treatment is necessary (especially if they have severe underlying allergy)

### SURGICAL TREATMENT FOR SNORING

- Adenoidectomy
  - If the adenoids completely block the back of the nose, removal may give a much clearer nasal airway, and complete resolution of snoring.

- In some cases, this treatment may be undertaken without needing tonsillectomy, meaning a day stay procedure (rather than overnight), a lot of less pain and downtime, and a lower risk of postoperative bleeding

## **HOW ARE THE ADENOIDS REMOVED?**

- There are multiple approaches. Traditionally this was with a curette, like a sharp spoon, and the adenoids were scraped out. This was usually associated with brisk bleeding initially, and a lack of precision in terms of adenoid removal.
- Modern techniques involve visualisation during the procedure with a mirror through the mouth, or even more effectively, a rigid endoscope through the nose.
- Dr Smith uses a coblation EVAC 70 probe that allows the adenoids to be vaporised under direct vision, with bleeding controlled by the inbuilt bipolar diathermy. A similar technique is suction diathermy using an electric current, but this delivers far greater thermal energy to the adenoidectomy bed, causing tissue charring, with a higher rate of postoperative crust.
- Adenotonsillectomy
  - If the tonsils are big, and there is sleep apnoea, tonsillectomy will be required in addition to adenoidectomy.

## **HOW ARE THE TONSILS REMOVED?**

- There are many different ways to remove the tonsils
- Dr Smith uses a state-of-the-art technique - COBLATION/ DISSECTION. This reduces thermal energy applied during the operation and has minimal blood loss. Reduced thermal energy will theoretically reduce postoperative pain
- Coblation of Inferior Turbinates
  - If the turbinates are swollen (usually with allergy), treatment with a coblation probe will cause them to shrink and help to get the best possible nasal airway, helping to reduce snoring.
  - In this procedure, the turbinates are shrunk, rather than cut out.
  - It is a relatively small procedure (day surgery) and is well tolerated even in young children.
  - It is very effective in most kids, but does not give as reliable, or as long-lasting a result as turbinoplasty, where part of the turbinate is removed
- Inferior Turbinoplasty
  - With the most severe cases of swollen turbinates, in revision treatments, or in older children (>10) this surgery will give a big improvement in the nasal airway.
  - In turbinoplasty, part of the turbinate is cut out.
  - A dissolving pack is required, suctioned out at 3-4 days.
  - An overnight stay is required, and recovery is a bit more uncomfortable than for turbinate coblation.

- The results are usually definitive in the treatment of nasal obstruction at the level of the inferior turbinates

## **PREPARATION FOR SURGERY**

- Once a decision for surgery is made, Dr Smith will provide appropriate printed information, we will watch appropriate video information discuss risks and benefits of treatment, and any question you may have will be answered.
- Information about expected costs are provided by the staff at the front desk, and if you wish we will put you in touch with our anaesthetist for the day of surgery.
- The hospital will be in touch the working day prior to admission, and give information on fasting times, where to park what to wear, what to bring and where and when to present at the hospital.
- We understand that the decision for surgery for your child is a big one, not to be undertaken lightly.
- We should only proceed to surgery when you are completely comfortable that it is the correct decision for your child.

## **WHAT ARE THE RISKS OF ADENOTONSILLECTOMY AND TURBINATE SURGERY IN CHILDREN?**

- General anaesthetic
- Bleeding from the throat or nose can occur any time up to 2 weeks (and rarely beyond this time). There is a 2% chance overall of bleeding requiring admission to hospital or another procedure to stop bleeding.). There is a 0.1% chance of requiring blood transfusion. If tonsillectomy is combined with turbinoplasty, the overall risk of bleeding may be higher than 2%.
- Change in the voice.
- Further specific discussion of risks will be undertaken at the time of booking a procedure, and you will be provided with appropriate printed information.

## **AFTER SURGERY CARE FOR ADENOIDECTOMY, AND TREATMENT OF THE TURBINATES**

- **For adenoidectomy with or without turbinate coblation**, discharge will be on the day of surgery.
- There will be minimal pain for most children, but a small number may have a pain around the nose or throat for up to a week.
- It is often possible to get back to normal activities within a day or two from surgery.
- With turbinate coblation, there is often crust in the nose as healing progresses. This can cause the nose to remain blocked in the early postoperative period. This is helped by saline nasal spray and gentle nose blowing
- **For turbinoplasty with or without adenoidectomy** there is often an overnight stay.
- The nose will be blocked for the first few days, until dissolving packing is suctioned from the nose at the first postoperative appointment.

- Saline wash such as FLO or SinusRinse and nose blowing will accelerate recovery.
- Up to a week off normal activity may be required.
- Remote travel or flying should not be planned for 4 weeks postoperatively.
- Heavy physical activity should be avoided for 3 weeks- gentle exercise may commence earlier in the postoperative period and gradually build up.

### **AFTER SURGERY CARE FOR TONSILLECTOMY, WITH OR WITHOUT ADENOIDECTOMY**

- An overnight stay is required.
- Continuous oximetry is required for the first postoperative night.
- In the most severe cases, supervision in High Dependency Unit or Intensive Care Unit with the involvement of their sleep paediatrician.
- Pain can be severe. It will require regular pain relief for up to 2 weeks:
  - Regular paracetamol.
  - Regular nurofen.
  - In some cases, breakthrough oxycodone is required.

### **COMPLICATIONS AFTER TONSILLECTOMY**

- Bleeding is the main potential complication with a rate of 2%.
- Bleeding can occur immediately after surgery (rarer) but has a peak between 5 and 10 days postoperatively.
- If pain control is not manageable at home, rarely, readmission to hospital may be required

### **POSTOPERATIVE APPOINTMENT SCHEDULE**

- In most cases, a single postoperative appointment at 2 weeks is all that is required.
- If the turbinates have been coblated, there may be crust in the nose at the first postoperative visit, and the nose may still be blocked. If this is the case a further review, or at least a follow up phone call may be required at 2-3 months to ensure that there has been a satisfactory improvement in symptoms
- If the turbinates have been partly excised (turbinoplasty), the nose will be suctioned at 5 days, and at least one further follow-up will be required at 2 weeks
- If at any stage after surgery, you are not happy with your child's airway or sleep (which is rare), please call Dr Smith's office. We will discuss what further can be done, and whether further review is necessary.
- There are no further out of pocket expenses for any reviews in the postoperative period

### **WHAT ARE THE RESULTS OF TREATING SLEEP APNOEA IN CHILDREN?**

- The most common cause for sleep apnoea in children is enlargement of the tonsils and adenoids.

- Fortunately, the results overall for surgical treatment of sleep apnoea in kids is excellent, dramatically improving the child's sleep quality and quality of life, even if the sleep apnoea had been severe previously.
- If your child has had a more severe level of sleep apnoea diagnosed on sleep study, your sleep paediatrician may recommend a routine repeat sleep study postoperatively
  
- In the rare cases where sleep apnoea is not completely cured after surgery, the most common issues are:
  - Severe allergic rhinitis (nasal allergy) requiring further treatment.
  - Issues related to the dimensions of the airway related to:
    - Very large tongue
    - Underdevelopment of the lower jaw
    - Severe narrowing of the palate
    - Elevated BMI (overweight)
  - Rarely the adenoids can grow back.
  - Further treatment may require
    - Improving nasal function
      - Nasal spray
      - Further surgical treatment of the turbinates or adenoids
    - Orthodonture
      - Maxillary expansion
      - Treatment of underdeveloped lower jaw (retrognathia)
    - Weight loss
    - CPAP
      - If there is no simple treatment to physically improve the airway, a mask giving positive pressure to the airway when asleep may be required.

## **WHAT ARE THE ALTERNATIVE TREATMENTS FOR SLEEP APNOEA IN CHILDREN?**

- If there is not a good response to simple treatment such as nasal spray in a child with significant sleep apnoea, surgery is the most appropriate option.
- CPAP, a pressure mask to open the airway, is only used in the most severe cases preoperatively, or if there is residual sleep apnoea after maximal surgical treatment.
- Rarely CPAP may be used if there is a strong desire to avoid surgery because of family preference, or because of other significant medical issues and anaesthetic risk

## **WHAT DO THE ADENOIDS AND TONSILS DO?**

- The tonsils and adenoids are part of the lymphoid system which is part of the immune system.
- The adenoids are theoretically the first point of contact for our immune system with substances inhaled through the nose.



- The tonsils are the first point of immune contact for substances which are swallowed.
- In humans, the tonsils and adenoids no longer play an important role, and their removal does not cause any problems for the patient.

### **DOES REMOVING THE TONSILS OR ADENOIDS LOWER IMMUNITY, LEADING TO MORE INFECTIONS?**

- This is a common misunderstanding and has never been scientifically demonstrated.
- For patients who have tonsillectomy or adenoidectomy with appropriate medical indications, such as severe recurrent tonsillitis, obstructive sleep apnoea or severe nasal obstruction, or adenoid infection, their overall wellbeing is substantially improved.
- Many patients who have had recurrent tonsillitis go from requiring extremely frequent antibiotics, to almost never requiring them.
- The tonsils and adenoids have been removed routinely for generations (more than 100 years!), in significant percentages of the population without any observed or documented problems

### **MY CHILD SNORES SEVERELY AND I AM WORRIED THAT THEY MAY BE STOPPING BREATHING, (THAT THEY HAVE SLEEP APNOEA). HOW LONG DOES IT TAKE TO SEE AN ENT SPECIALIST?**

- Sleep apnoea can be a very concerning problem for your child.
- If you indicate your concern at the time of making your appointment, Dr Smith will be able to see your child within 2 weeks in most cases, and even sooner if you feel the issue is very pressing.