

ADENOTONSILLECTOMY

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Outline

- BJAEd have published 2 (yes 2) articles this year
- Common procedure
- Complications
- Topical e.g. GIRFT, ER
- Plenty of scope for questions
- Recently published UK guidelines

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Outline

- OSA and sleep disordered breathing
- Premeds
- Hydration
- Anaesthetic techniques
- PONV
- Analgesia
- Managing complications

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“Open you mouth bigger than me!”



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Indications for AT

- Obstructive sleep disorder breathing
- OSA is one extreme
- Polysomnography is the gold standard Ix
- Separate to recurrent tonsillitis population

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OBS history

- Severity of disease along the spectrum of oSDB is reflected by increasing frequency and degree of upper airway obstruction, non-restorative/fragmented sleep, and abnormal oxygenation and ventilation.

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Why do the tonsils get big?

- Adenotonsillar hyperplasia is the result of an interaction between
 - environmental stressors (e.g. passive smoking) and
 - underlying genetic predisposition of the child.
 - The risk of OSA increases in those with a positive history in first-degree relatives

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Contributing factors

- In addition, abnormal orofacial features at premature birth can result in
 - abnormal nasal airway resistance
 - oral facial hypotonia,
 - mouth breathing
 - changes in maxillary-mandibular growth.
- Neuromuscular and genetic syndrome-related airway endotypes can span all ages.
- Multiple coexisting airway endotypes are possible (e.g. trisomy-21).

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What is OSA??

- The pathophysiology of paediatric OSA is characterized by a narrowed upper airway that is susceptible to muscular collapse, secondary to negative inspiratory airway pressure whilst asleep.

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OSA effects

- OSA is associated with
 - low socioeconomic status
 - frequent users of healthcare resources
 - excessive use of antibiotics for frequent throat and RTIs
 - asthma.
- OSA can change a patient's lifetime health course and can cause premature death
- Associated behavioural disorders and systemic inflammation predispose
 - increased reports of head injury and
 - early onset atheromatous cardiovascular disease,

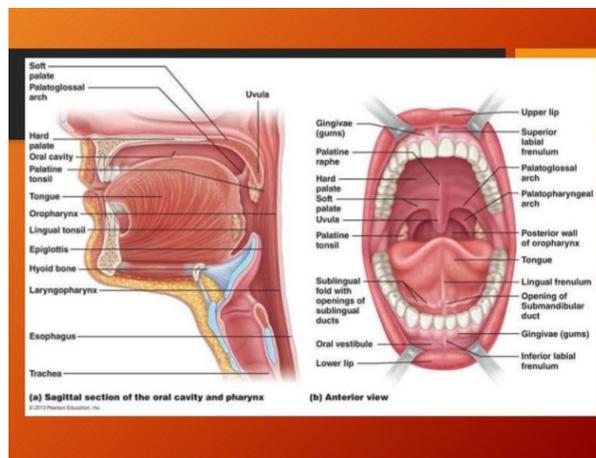
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OSA syndrome

- Obstructive sleep apnoea syndrome implies associated end-organ dysfunction,
- cardiopulmonary disease, metabolic dysfunction and neurocognitive and behavioural disorders.
- The estimated prevalence of OSA is 1-5%, although the prevalence in syndromic children can be >50%

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Anatomy of the airway



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Premed contraindications

- Anticipated difficult airway
- Obstructive or central sleep apnoea
- Increased risk of aspiration
- Severe renal or hepatic impairment
- Altered conscious level or increased ICP
- Acute systemic illness
- New or unexplained low oxygen saturations on air
- Upper respiratory tract infection
- Previous adverse or allergic reaction to medication

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Premed

- Be warned in the AT population!
- Monitoring at the bedside, keep at bedside
- Post op also

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Premed and AT

- Sedative premedication in children with (OSA) may cause pre- and postoperative airway obstruction and desaturation.
- However, a safe and non- traumatic induction of anaesthesia is not possible without premedication for some children.
- Thus, the appropriate sedatives should be used with caution.
- Midazolam may increase supraglottic airway resistance, induce central apnoeas and decrease the arousal response to hypoxia and hypercarbia

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Fasting

- A recent joint consensus statement by the APAGBI and ESPA agreed that based on the current literature and in the absence of a contraindication,
“children should be encouraged and allowed to consume clear liquids up to 1 h before elective general anaesthesia, up to a maximum volume of 3 ml per kg “

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PONV assessment

- Paediatric specific Eberhart risk score
- 4-point scale assigns one point for each of:
 - surgery longer than 30 min,
 - age older than 3 yr,
 - strabismus surgery
 - history of PONV in relatives.
- When none, one, two, three or four independent predictors are present, the risk for PONV is approximately 10%, 30%, 50% or 70%, respectively.

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Antiemetics

- (5-HT₃) receptor antagonists, specifically ondansetron 0.1 mg kg
 - for both prophylaxis and rescue treatment of PONV.
- Other first-line prophylactic antiemetics include dexamethasone 0.15-0.3 mg kg

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Opioid sparing?

- Options for multimodal analgesia to reduce opioid requirements in children include paracetamol, NSAIDs, gabapentin, dexamethasone, clonidine, dexmedetomidine
- Reduction in parenteral opioid requirements potentially contributes to faster return of gut motility. Adjunct therapies can be administered i.v., orally, rectally to prolong postoperative analgesia.

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Factors associated with persistent or worsening OSA

- obesity
- persistent tonsillar hypertrophy
- male sex
- African descent
- Acute tonsillitis/tonsillitis-pharyngitis

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Anaesthetic drugs and OSA

- Most anaesthetic agents, in addition to reducing pharyngeal tone, impair ventilatory drive (particularly opioids) and arousal-related airway self-rescue.
- The patient with OSA is vulnerable to these drugs.
- Oxygen administration reduces ventilatory instability, and therefore can **mask** airway obstruction

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Why is OSA bad for you in AT?

- In a genetically predisposed child, the oxidative stress from recurrent hypoxaemia results in increased concentrations of endorphins and reactive oxygen species.
- This results in upregulation of brainstem mu-opioid receptors and systemic inflammation-prone genetic alterations
- The former may explain increased sensitivity to the respiratory effects of opioids,

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OSA issues

- Most children with OSA have a normal body habitus.
- Obese children have a 2-5 times risk for OSA
- Failure to grow is associated with SDB in preschool children.
- Behavioural problems are well established
 - ADHD, depression, social withdrawal, and aggression.
- Children with oSDB have a 3.6 x risk of severe asthma
- AT surgery may reduce exacerbations

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Anaesthetic considerations

- Difficult to determine high risk
- No agreed assessment process
- Beware the young, and obese adolescents
- Snoring history and apnoeas
- Smoking household
- Asthma
- Recent URTI (3x risk issues)

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Morbidity and Mortality

- Common complications
 - PONV
 - PAIN
 - DEHYDRATION
- Rarer ones can be fatal
 - Laryngospasm
 - 1ry or 2ry haemorrhage

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Analgesia

- No codeine!!
- REGULAR paracetamol and ibuprofen
 - SYNERGISTIC
- Pain 5/10 at 1 week
- Median pain score 6 at 1 week in UK study
- Clonidine/Dexmedetomidine but titration and timing is difficult to get right

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Considerations

- PONV
- Dehydration
 - Common cause of young readmission
- Opioid administration
- Difficult BMV on induction
 - “Stiffen airway” with slight sitting up position
 - Guerdel

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COMPLICATIONS!!!!

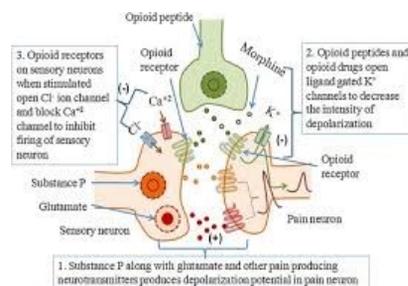
- Onset Description
- Immediate Trauma or burn (secondary to surgical technique or airway device ignition) to eyes, lips, teeth, mandible, temporomandibular joint, cervical vertebra, tongue, uvula, soft palate, pharynx, carotid artery and larynx
- Compression or dislodgement of airway device
- Bleeding at surgical site
- Intermediate (PACU 24 h) Emergence delirium
- Pain, including referred otalgia
- Major respiratory event, including post-obstructive pulmonary oedema and aspiration
- Nausea and/or vomiting
- Primary bleeding (caused by surgical technique), including need for blood transfusion
- Death secondary to PRAE and/or bleeding
- Delayed (>24 h) Pain, including referred otalgia
- Nausea or vomiting
- Dehydration, delayed feeding, or fever
- Secondary bleeding (caused by wound healing), including need for blood transfusion up to 2 weeks
- Speech disorders (e.g. velopharyngeal incompetence)
- Injury to hypoglossal, glossopharyngeal, or vagal nerve resulting in transient or permanent dysphagia or altered taste
- Persistent or recurrent OSA/oSDB
- Tonsil regrowth or recurrent tonsillitis
- Nasopharyngeal stenosis
- Neck infection
- Internal jugular vein thrombosis
- Death secondary to PRAE and/or bleeding

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Pain

- OSA and sleep deprivation upregulate pain receptors (mu opioid)
- AND are more sensitive to opioids
 - **Bad combination**
- Concerns about inflammation – Dex/NSAIDs benefit
- No codeine at all – acetylation varies

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Top tonsil tips

- Try not to premed them
- Green snot – cancel!!!!
- Sneak the oxygen in any way you can
- Use a guerdel
- Give plenty of propofol
- Use short acting opioids – you can always give more
- LMA vs. ETT – neither is right or wrong

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Tonsil top tips

- 2 antiemetics
- Paracetamol and diclofenac PR
- Fluids 10-20ml/kg
- Suction down the nostrils before you extubate
- Awake Awake Awake or deep deep deep
- Never in between!

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Hens teeth

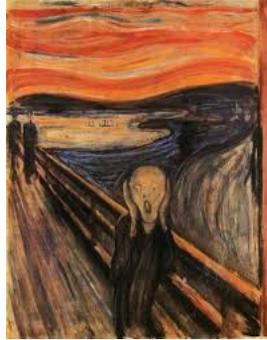
- 3am
- 2ry tonsil bleed
- 2L bright red vomit
 - And all over the ambulance
- Tachycardia
- Obese adolescent ++
-are you already concerned?

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- And as the ED reg tries to take a G&S for Xmatch.....

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- Mum says they are all Jehovah's witnesses



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Any questions?

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