

# Pediatric Guide to Tonsillectomy and Adenoidectomy

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# Objectives

- ▶ Familiarization with the tonsillectomy and adenoidectomy (T&A) procedure according to current literature
- ▶ Learn to identify the risks involved in taking care of pediatric T&A patient
- ▶ Identify which subpopulation is at higher risk.
- ▶ Learn about the special considerations when managing a pediatric airway
- ▶ Understand the effects that OSA has on narcotic tolerance.
- ▶ Review current literature supporting narcotic use and multimodal pain management techniques for pediatric T&A



# Case Scenario

- ▶ Pediatric rotation of an SRNA
- ▶ 3 year old male for T&A, first patient of the day
- ▶ Inhalational induction lead to patient going apneic, mask ventilation was difficult, but possible
- ▶ DL view was impaired by enlarged tonsils.  
Intubated x1 attempt
- ▶ Typical morphine dose for post op pain: 0.1mg/kg
- ▶ Uneventful surgical procedure, patient discharged 4 hours later then expected.
- ▶ Sent home with prescription children's ibuprofen as only mode of analgesia.

# Introduction to T & A

T&A is the most common surgical procedure performed in the pediatric population. Around 737,000 performed a year (Baugh et al., 2013)

Painful procedure requiring adequate pain control. Narcotic administration is the preferred method of analgesia in the perioperative period. Unwanted complications from opioids, such as oversedation and respiratory depression are unwanted but commonly seen. (Tekelioglu et al. 2013)

Main reason for : OSA leading to sleep disordered breathing accounting for over 500,00 of cases (Kieran et al., 2013)

Children with significant OSA are at increased anesthetic risk in the perioperative period than patients with normal upper airway (Heitmiller et al., 2009).

OSA IS A MAJOR FACTOR WHEN DETERMINING ANESTHETIC PLAN



# Pediatric Airway (Naglehout)

just little adults!

In general, Infants have a large tongue and cranium in relation to small mandible and maxilla → Increased risk of airway obstruction.

Chest wall more compliant than adults → Collapsible with inspiratory efforts against partial occlusion. (P. 1203)

**TABLE 47-3** Differences Between the Adult Airway and the Pediatric Airway

	<b>Pediatric</b>	<b>Adult</b>
Laryngeal location	C2-C4	C3-C6
Narrowest location of airway	Cricoid	Glottis
Shape of epiglottis	Longer, more narrow	V-shaped
Right mainstem bronchus	Less vertical	More vertical

- Children younger than 10 years narrowest part of airway is below the vocal cords at the level of the cricoid cartilage → clinical significance: uncuffed endotracheal tube can clear the airway but cuffing may create mucosal pressure at the level of the cricoid ring. For this reason, traditionally uncuffed endotracheal tubes have been used in children less than 8 years of age \* (P.59)

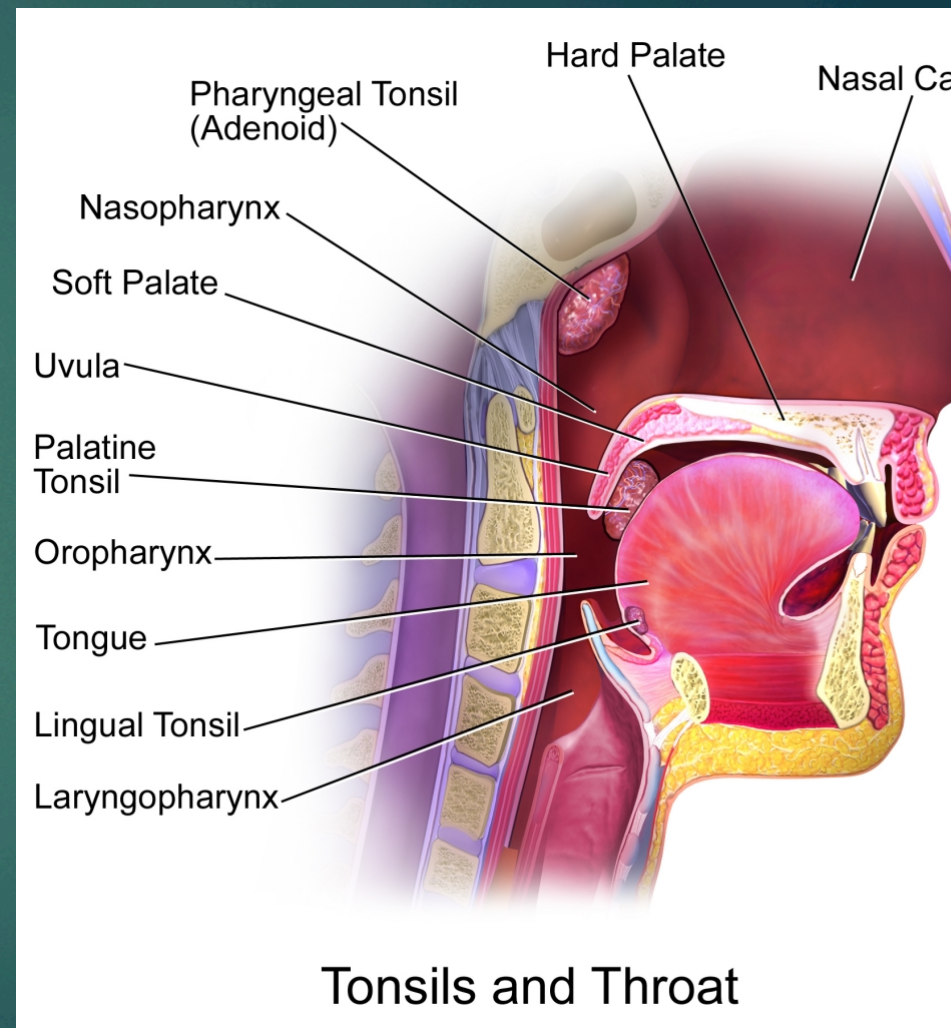
# Tonsils and Adenoids (Pharyngeal Tonsil)

Tonsils are the simplest lymphoid organs. Named according to their location, to form what is known as Waldeyer's tonsillar ring. (Palatine, lingual, pharyngeal, tubal)

Appear as swellings of mucosa that gather and remove pathogens entering the pharynx through food or inhaled air.

Calculated risk inviting pathogens to create memory mediated immunity and destroy them.

Process can often lead to infection.



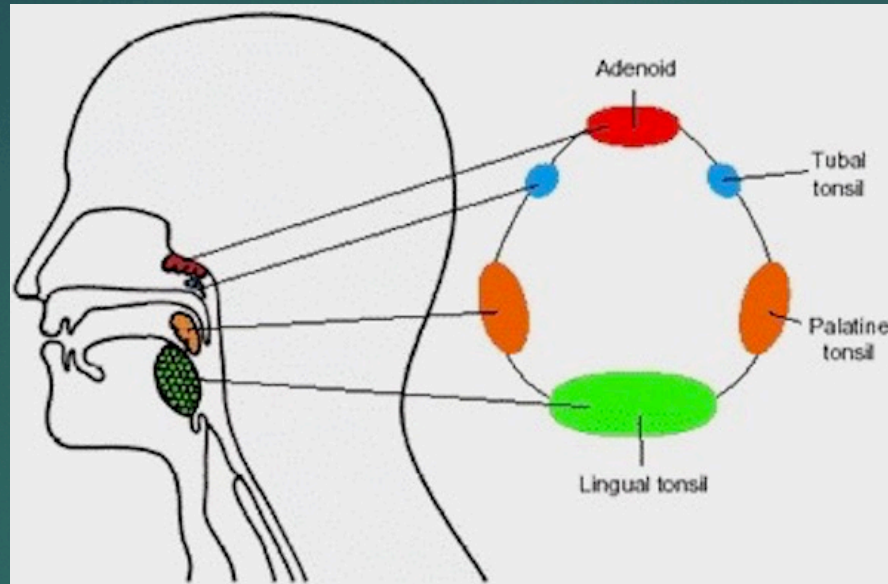


# Tonsils and Adenoids

Type	Epithelium	capsule	Crypts	Location
<b>Adenoids</b>	Ciliated pseudostratified columnar	Incompletely encapsulated	No crypts, but small folds	Roof of pharynx
<b>Tubal tonsils</b>	Ciliated pseudostratified columnar			Roof of pharynx
<b>Palatine tonsils</b>	Non-keratinized stratified squamous	Incompletely encapsulated	Long, branched	Sides of oropharynx between palatoglossal and palatopharyngeal arches
<b>Lingual tonsils</b>	Non-keratinized stratified squamous	Incompletely encapsulated	Long, branched	Behind terminal sulcus (tongue)

<http://humananatomylibrary.com/anatomy-of-a-tonsil/>

# Tonsils and Adenoids



Waldeyers Ring

[http://  
www.outlandernatomy.com/  
tag/tonsils/](http://www.outlandernatomy.com/tag/tonsils/)



[mananatomylibrary.com/anatomy-of-a-tonsil/](http://mananatomylibrary.com/anatomy-of-a-tonsil/)

[Http://www.entusa.com](http://www.entusa.com)



# &A's Unique Challenges For Anesthesia Providers!

- ▶ Shared airway between the anesthesia provider and surgeon.
- ▶ Presence of bloody secretions within the airway itself.
- ▶ Significantly higher risk of airway complications such as laryngospasm, limited intraoperative access to the patient's airway and perioperative ventilatory compromises.
- ▶ Traditional pain management techniques that rely heavily on the administration of short and long acting narcotics have resulted in respiratory depression and significant morbidity and mortality.

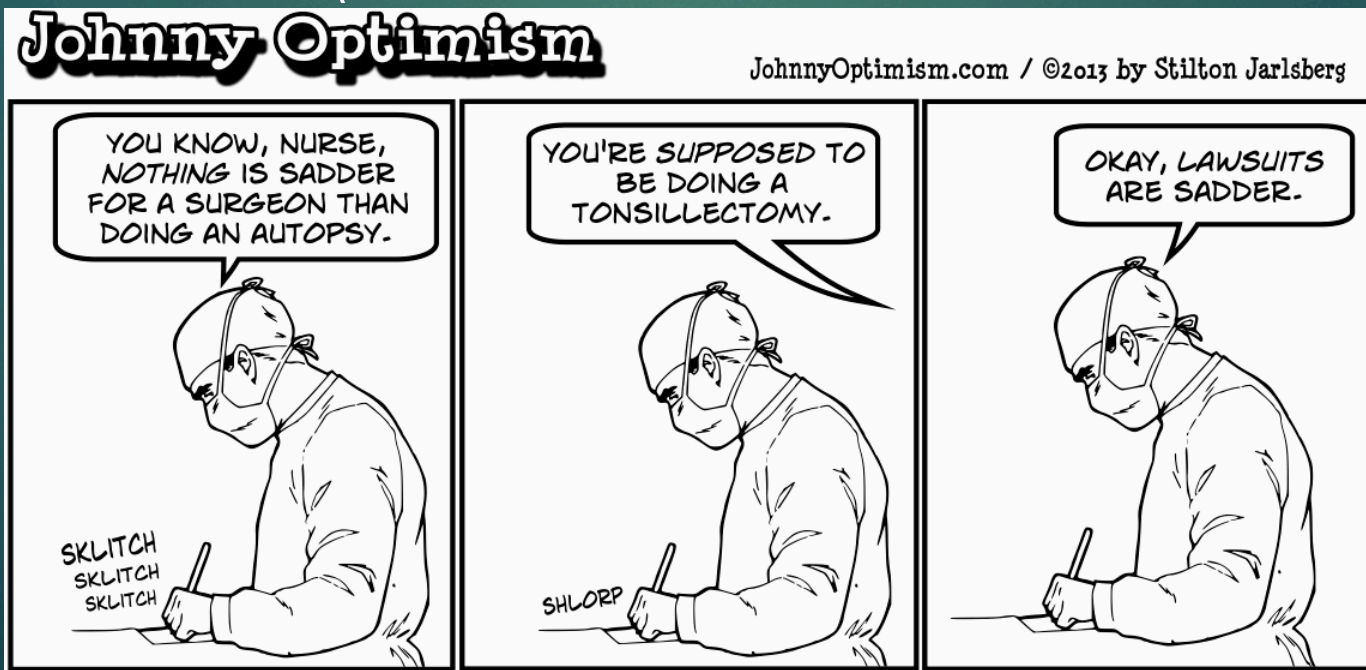
# Legal Implications





# Legal Implications

- ▶ Postoperative bleeding is the most common complication associated with malpractice. However, anoxia related to opioids and anesthesia has the greatest overall risk from a monetary standpoint (Sadhasivam, Subramayam, Varughese, & Wilging, 2013).
- ▶ An anoxic event was noted to have the highest monetary award at \$9,017,379 and injuries including anoxia had higher mean monetary awards than death (Mahmoud, Patino, & Sadhasivam, 2013).



# Lack of Knowledge

- ▶ The lack of knowledge regarding the intrinsic pathology of T&A along with the use of narcotics for pain control has been found to potentiate obstructive sleep apnea, that lead to increase morbidity and mortality.
- ▶ Medication errors and the lack of consistent practices in the administration of pain medication are also factors in post-tonsillectomy deaths.
- ▶ Implementing evidence based standardized pain management practices would, therefore, promote the quality of care and safely leading to better patient outcomes. (Goldman et al., 2013).



# LACK OF SET GUIDELINES FOR ANESTHESIA PROVIDERS

- ▶ Anesthesia providers and surgeons should strive to develop and evaluate ways of identifying children at high risk to determine safe postoperative outcomes.
- ▶ Currently, however, there is no set standard for perioperative pain management for the pediatric T&A patient in either ambulatory or inpatient settings, which has led to respiratory compromise.
- ▶ Of concern locally, is the absence within the Adventist Health System (AHS) of standardized guidelines for this vulnerable population regarding preoperative screening to identify OSA, intraoperative anesthetic management, postoperative pain management or monitoring for adverse respiratory outcomes.

# Preoperative Evaluation



- ▶ Video provided by the British Lung Institute



# Preoperative Evaluation

- ▶ The ASA practice guidelines for the management of patients with OSA recommend patients over 1 year of age should be screened for OSA prior to undergoing surgery (Cheung et al., 2013)
- ▶ Polysomnography (PSG) is the gold standard for assessing and gauging severity of OSA.
- ▶ The American Academy of Otolaryngology's Clinical Practice Guideline recommends PSG in children suffering from symptoms of OSA prior to T&A if medical comorbidities exhibited [obesity, trisomy 21, craniofacial abnormalities, neuromuscular disorders, sickle cells and inherited metabolic conditions] (Kieran et al., 2013)
- ▶ In common practice, PSG not readily available or incorporated in care. It is unnecessary to perform in every case and does not establish the effects of sleep disordered breathing (SDB) on the child's well being.



# Preoperative Evaluation

## Apnea Hypopnea Index (AHI)

- ▶ The AHI is the number of apneas or hypopneas recorded during the study per hour of sleep. It is generally expressed as the number of events per hour. Based on the AHI, the severity of OSA is classified as follows:
  - None/Minimal:  $AHI < 5$  per hour
  - Mild:  $AHI \geq 5$ , but  $< 15$  per hour
  - Moderate:  $AHI \geq 15$ , but  $< 30$  per hour
  - Severe:  $AHI \geq 30$  per hour
- ▶ Sometimes the Respiratory Disturbance Index (RDI) is used. This can be confusing because the RDI includes not only apneas and hypopneas, but may also include other, more subtle, breathing irregularities. This means a person's RDI can be higher than his or her AHI.

## Oxygen Desaturation

- ▶ Reductions in blood oxygen levels (desaturation) are recorded during polysomnography or limited channel monitoring. At sea level, a normal blood oxygen level (saturation) is usually 96 - 97%. Although there are no generally accepted classifications for severity of oxygen desaturation, reductions to not less than 90% usually are considered mild. Dips into the 80 - 89% range can be considered moderate, and those below 80% are severe.



# Preoperative Evaluation

- ▶ Special consideration when assessing the probability and severity of OSA is required. The incidences of peri-operative respiratory complications are 10 times higher for children with OSA compared to those without OSA (Lauder and Emmott, 2014).
- ▶ According to Schwengel (2009) the initial approach to a child with suspected sleep disordered breathing should include assessment of:
  - Behavioral problems,
  - Poor school performance
  - Decreased quality of life
  - Failure to thrive
  - Enuresis
  - Standard airway assessment
  - Nasal anatomy
  - Ability to breath through nose
  - Tonsillar size
- “I’m Sleepy” questionnaire

**Table 5. Pediatric Obstructive Sleep Apnea Screening:  
“I’M SLEEPY” Questionnaire (Parent Version)\***

I: Is your child often irritated or angry during the day?	<input type="checkbox"/> Yes <input type="checkbox"/> No
M: Body mass index >85%?	<input type="checkbox"/> Yes <input type="checkbox"/> No
S: Does your child usually snore?	<input type="checkbox"/> Yes <input type="checkbox"/> No
L: Does your child sometimes have labored breathing at night?	<input type="checkbox"/> Yes <input type="checkbox"/> No
E: Ever noticed a stop in your child’s breathing at night?	<input type="checkbox"/> Yes <input type="checkbox"/> No
E: Does your child have enlarged tonsils and/or adenoids?	<input type="checkbox"/> Yes <input type="checkbox"/> No
P: Does your child have problems with concentration?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Y: Does your child often yawn or is he or she often tired/sleepy during the day?	<input type="checkbox"/> Yes <input type="checkbox"/> No

\*A score of 0 to 2 indicates a low risk of obstructive sleep apnea (OSA); high risk is indicated by a score  $\geq 3$  (sensitivity, 82%; specificity, 50%; negative predictive value, 85%). This questionnaire has not yet been validated in larger studies

From Ref. 59.



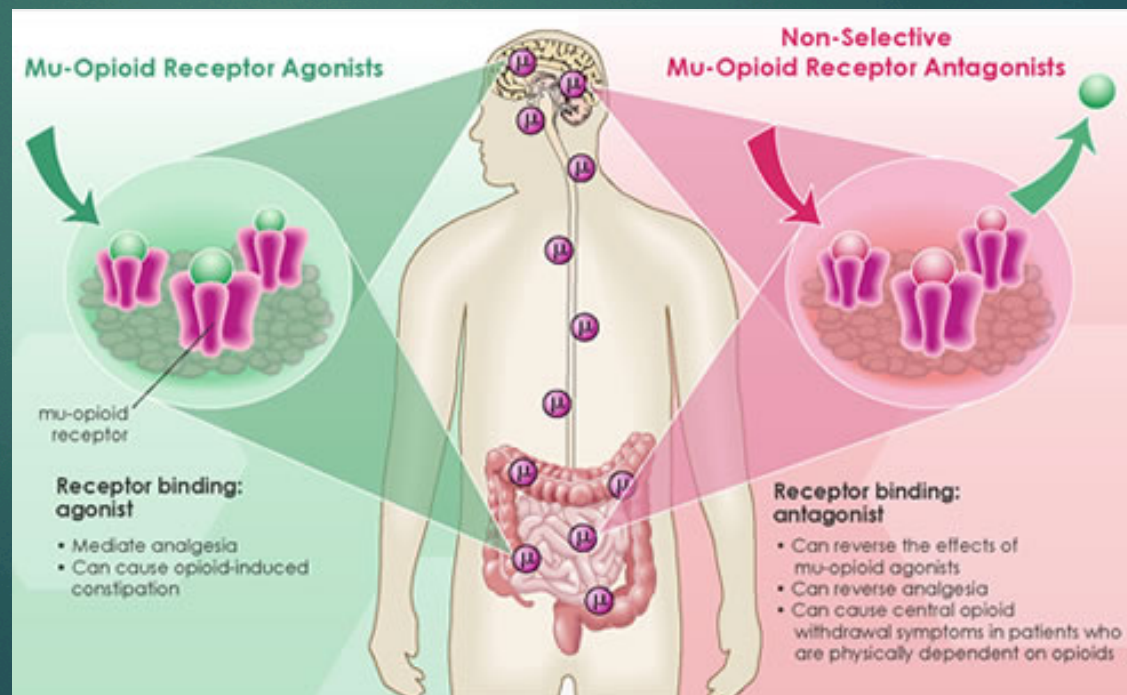
# Anesthetic Plan



Decrease use of opioids!

# Anesthetic Plan

- ▶ Perioperative complications are due in part to an increased response to opioids from OSA patients.
- ▶ Continuous hypoxia, induces increased number of pain related mu opioid receptors in children with severe OSA that explains the heightened sensitivity to postoperative morphine given for analgesia (Brown 2004)



<https://www.opiate.com/agonist/list-of-opioid-agonist-drugs/>



# Anesthetic Plan

- ▶ Morphine has become the standard against which all other forms of analgesia are measured (Lauder & Emmott 2014).
- ▶ Due to the upregulation of pain receptors, morphine requirement for children with OSA is reduced (Brown et al., 2004)
- ▶ Theoretically, Hydromorphone has fewer side effects than morphine, but 8-10x more potent. It has led clinicians to underestimate its respiratory depressant effects (Wolfe et al. 2016).
- ▶ In the past, Codeine was the analgesic of choice for post op pain control. But has been found directly responsible for multiple pediatric deaths (Wolfe et al. 2016)
- ▶ In 2012, a black-box warning against codeine-containing medications in children undergoing tonsillectomy was issued by the Food and Drug Administration (FDA) (Greenberg et al., 2014)

# Anesthetic Plan

- ▶ There has been a great effort to convert anesthesia providers to using multimodal approach decrease use of opioids
- ▶ Use of Non-opioids such as acetaminophen, ketorolac, dexamethasone, ibuprofen and dexmedetomidine became subjects of study.
- ▶ The premise is targeting different analgesic mechanisms and reducing the dose requirements of single agents, therefore, minimizing dose-dependent adverse effects.
- ▶ In practice, anesthesia providers avoid non-steroidal anti-inflammatory drugs (NSAIDs) in children undergoing T&A due to increased risk of post-operative bleeding (Greenberg, Mattos, Robison, & Yellon, 2014).



# Anesthetic Plan

- ▶ Preparedness is Key
- ▶ Anticipate difficult mask ventilation and/or difficult intubation due to large tonsils and decreased pharyngeal space.
- ▶ Airway management tools available...and know how to use them!
  - Variety of sizes of facemasks, oral airways, nasopharyngeal airways, tracheal tubes, laryngoscope blades and handles, and laryngeal mask airways
- ▶ Careful when in the airways!!
  - Oral airway is preferred. Nasal can cause trauma to the hypertrophied adenoid tissue → risk bleeding
  - Introducing and manipulating an oral airway and laryngoscope blade can inadvertently cause trauma to the enlarged tonsils → bleeding
- ▶ ETT: Wire Reinforced vs. Oral RAE vs regular tube. (Surgeon preference)



# Anesthetic Plan

- ▶ REMEMBER: Advanced airway interventions may be necessary to maintain airway patency, oxygenation and adequate ventilation.
- ▶ Avoidance of airway complications require:
  - institutional and individual preparedness
  - careful assessment
  - good planning and judgment
  - good communication and teamwork
  - knowledge and use of a range of techniques and devices
  - willingness to stop performing techniques when they are failing.
- ▶ Premedication in peds: Midazolam 0.5-0.7 mg/kg PO. Some clinician advocate avoiding in children with OSA. (Mahmoud et al.,2013)
- ▶ Schwengel (2009) states that sedation resembles natural sleep, with increased airway collapse as a result of increased closing pressure, loss of pharyngeal muscular tone, and failure to coordinate phasic activation of upper airway muscles with diaphragmatic activity (Note video example from the British lung institute )
- ▶ Antisialagogue recommended. Typically Robinul 0.01mg/kg once IV access has been obtained.



# Tonsillectomy and Adenoidectomy

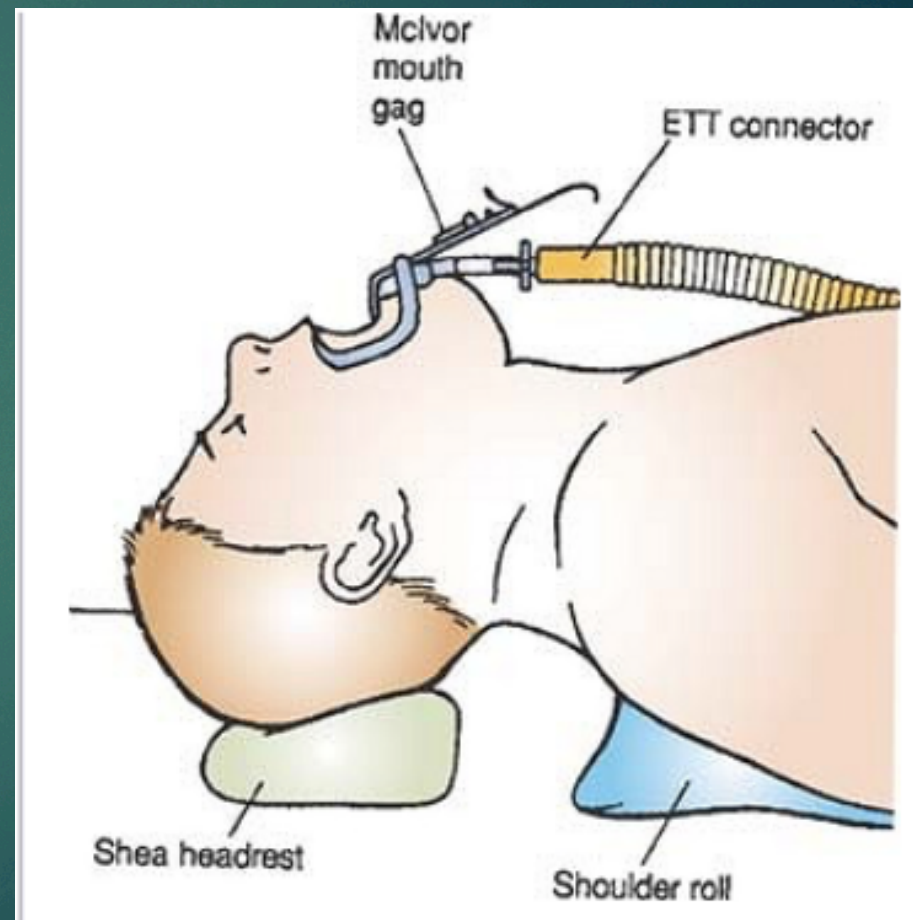
Inhalational induction. Typically up to 16 y/o with fear of needles (Naglhout p. 1200)

Position: "Rose position" supine, shoulder roll, head extended. Table turned 90-180 degrees.

Mouth gag (McIvor) is inserted and secured to the mayo stand.

- Can be very stimulating. Can occlude ETT.
- Ensure adequate anesthesia for this part, verify ETT position and patency before and after mouth gag positioning/repositioning

NMB are ok to use. (Moving, coughing and swallowing are contraindicated)



# Tonsillectomy and Adenoidectomy

ly, a throat pack is used.

oids are removed first with a curette, and the nasopharynx  
ed.

ectomy: grasping the upper pole of tonsil and drawing it medially  
s a mucosal incision to be made over the anterior faucial pillar.

is dissected from its bed and removed. A snare may be used to  
he dissected tonsil off at the lower pole.

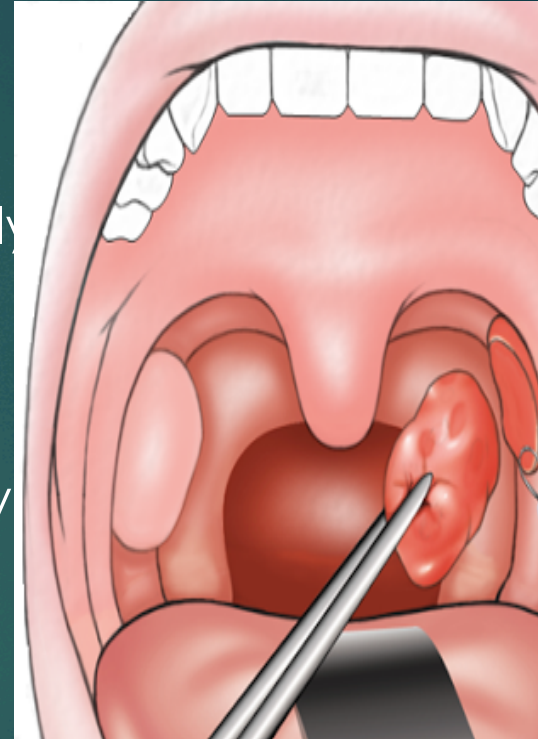
ostasis is secured with gauze packs and the use of electrocautery

oval of throat and nasal packs verified before extubating

ic suctioning of swallowed secretions and blood reduces risk of  
/

tentive to laryngospasm/bronchospasm. Consider deep  
oation

operative airway edema along with bleeding may result in  
uctive symptoms and hypoxemia (Diefenderfer et al., 2010).



[www.postcare.ca](http://www.postcare.ca)



# Tonsillectomy and Adenoidectomy

- ▶ Residual effects of anesthetics and opioids administered can manifest in the postoperative period as apnea and hypopnea. Leading to hypoxemia and hypercarbia.
- ▶ Any respiratory issues that existed before the surgery will persist in the post op period
- ▶ Baugh (2014) recommends clinicians and care takers set realistic goals. As eliminating pain completely would very likely lead to respiratory depression and believes the control of pain, not its elimination should be the objective.

# Postoperative Care



**You're gonna end up eatin' a steady diet of popsicles and livin' in a recliner down by the television!!!!**



# Postoperative Care

- ▶ There is little to no immediate improvement in ventilation after surgery, suggesting that any respiratory issues that existed before the surgery will still require an undetermined amount of time to correct themselves.
- ▶ Frequently, postoperative airway edema, along with increased sensitivity to the respiratory-depressant effects of opioids, may result in obstructive symptoms and hypoxemia (Diefenderfer et al., 2010).

# Postoperative Care

- ▶ Residual effects of anesthetics and opioids administered can manifest in the postoperative period as apnea, hypopnea, desaturation, and hypercarbia (Sadhasivam et al., 2013).
- ▶ As the care provider role switches from the anesthesia team to the post anesthesia care unit (PACU) team, understanding of the sedative effects of analgesics and airway management is required to provide safe continuity of care.



# Postoperative Care

- ▶ Traditionally the focus on reducing postoperative morbidity and mortality has been whether the patient should be admitted to the hospital for monitoring overnight.
- ▶ The onset of respiratory compromise following a tonsillectomy has been found to occur less than 15 hours after having the procedure.
- ▶ However, the standard for tonsillectomy and adenoidectomy has shifted to making it mainly an ambulatory procedure with patients being sent home within 24 hours of surgery (Brown et al., 2004).

# Postoperative Care

- ▶ The care of the patient shifts again, landing on the parent or guardian to determine how much narcotic the patient needs vs. how much he or she has had already.
- ▶ There is increased concern for postoperative respiratory complications that may necessitate intubation and other major interventions, which are only immediately available in the hospital setting (Kieran et al., 2013)



# Postoperative Care

- ▶ Baugh (2014) recommends clinicians and care takers set realistic goals as eliminating pain altogether would very likely lead to respiratory depression, and believes the control of pain, not its elimination, should be the objective.
- ▶ The greater number of tonsillectomies performed in the United States may account for the current recognition of this problem; therefore, further research is needed to determine best practices for perioperative care, hospital admission criteria, and pain management.

# Review of Literature





ugh, R. F., Brereton, J., Brenner, M. J., Davies, L., Eisenberg, L. D., Goldman, J. L., ... Stachler, R. J. (2013). Mortality and major morbidity after tonsillectomy: Etiologic factors and strategies for prevention. The Laryngoscope, 123, 2544-2553. <http://dx.doi.org/10.1002/lary.23926>

- ▶ **Objectives:** To report data on death or permanent disability after tonsillectomy.
- ▶ **Method:** 32-question survey was disseminated via the American Academy of Otolaryngology–Head and Neck Surgery electronic newsletter, regarding adverse events after tonsillectomy, capturing demographic data, risk factors, and detailed descriptions. N=552
- ▶ **Results:** events occurred in 38 children (71%), 15 adults (25%) The events were classified as **related to medication (22%)**, pulmonary/ cardiorespiratory factors (20%), hemorrhage (16%), perioperative events (7%), progression of underlying disease (5%), or unexplained (31%). Of unexplained events, all but one occurred outside the hospital



fenderfer, J. W., Friedman, E. M., Glover, C. D., McGilberry, M., Larrier, D. R., Olutoye, O. A., & Watcha, M. F. (2010, ). The effect of intraoperative dexmedetomidine on postoperative analgesia and sedation in pediatric patients undergoing tonsillectomy and adenoidectomy. *Pediatric Anesthesiology*, 111, 490-495. <http://dx.doi.org/10.1213/ANE.0b013e3181e33429>

- **Objectives:** double-blind, randomized controlled study to determine the effects of intraoperative dexmedetomidine on postoperative recovery including pain, sedation, and hemodynamics in pediatric patients undergoing tonsillectomy and adenoidectomy.
- **Method:** One hundred nine patients were randomized to receive a single intraoperative dose of dexmedetomidine 0.75  $\mu$ g/kg, dexmedetomidine 1  $\mu$ g/kg, morphine 50  $\mu$ g/kg, or morphine 100  $\mu$ g/kg over 10 minutes after endotracheal intubation.
- **Results:** The median time to first postoperative rescue analgesic was similar in patients receiving dexmedetomidine 1  $\mu$ g/kg and morphine 100  $\mu$ g/kg, but significantly longer compared with patients receiving dexmedetomidine 0.75  $\mu$ g/kg or morphine 50  $\mu$ g/kg ( $P < 0.01$ ). The use of dexmedetomidine 1  $\mu$ g/kg and morphine 100  $\mu$ g/kg had the advantages of an increased time to first analgesic and a reduced need for additional rescue analgesia doses, without increasing discharge times



eenberg, J., Mattos, J. L., Robison, J. G., & Yellon, R. F. (2014). Acetaminophen plus ibuprofen versus opioids for treatment of post-tonsillectomy pain in children. *International Journal of Pediatric Otorhinolaryngology*, 78, 1671-1676. <http://dx.doi.org/10.1016/j.ijporl.2014.07.017>

- ▶ **Objective:** To determine the efficacy and safety of acetaminophen plus ibuprofen in treatment of post- tonsillectomy pain compared to acetaminophen plus opioids in children.
- ▶ **Method:** Children undergoing total tonsillectomy (n = 1065). Analysis included descriptive analysis, chi-square testing, and logistic regression for differences of outcomes: (1) post- operative bleeding, (2) emergency department visits for pain/dehydration/bleeding
- ▶ **Results:** ibuprofen did not increase the risk of bleeding or the likelihood of a post-operative ED visit. Ibuprofen prescription may possibly increase the risk of multiple bleeding episodes, but further prospective studies are needed. Increased age increases the risk of bleeding



U, U. Y., Apuhan, T., Akkaya, A., Demirhan, A., Yildiz, I., Simsek, T., . . . Lerman, J. (2013). Comparison of topical tramadol and ketamine in pain treatment after tonsillectomy. *Pediatric anesthesia*, 23(6), 496-501. <http://dx.doi.org/10.1111/pan.12148>

- ▶ **Objectives:** To evaluate the effects of topically applied ketamine or tramadol on early postoperative pain scores in children undergoing tonsillectomy
- ▶ **Methods:** 60 Children between ages of 4-10 randomly assigned to group K (ketamine), group T (tramadol HCL solution) and group C (Saline as a control). Ramsey sedation scale and Wong-baker FACES score used to assess response
- ▶ **Findings:** Statistically significant difference among the groups according to Ramsay Sedation Scales in 40th minute ( $P < 0.001$ ). And in Wong-Baker FACES Pain Rating Scale Score in all time points ( $P < 0.004$  for all). Topical tramadol and ketamine seem to be safe, effective, and easy analgesic approach for decreasing tonsillectomy pain.



Orman, C., Kieran, S., Kirby, A., Lander, L., Oyemwense, N., Robertson, D., & Schwartz, M. (2013). Risk factors for desaturation after tonsillectomy; Analysis of 4092 Consecutive Pediatric cases. *The Laryngoscope*, 123, 2554-2559.  
[http:// dx.doi.org/10.1002/lary.23956](http://dx.doi.org/10.1002/lary.23956)

- ▶ **Objectives:** To identify clinical risk factors for oxygen desaturation in the first 24 hours post-tonsillectomy and who requires added monitoring
- ▶ **Method:** N=4092 (total patients undergoing T&A). A retrospective analysis. clinical data were recorded for all patients who desaturated in the postoperative period (n = 294) and randomly selected controls (n = 368). Univariate and Multivariate analysis was performed in order to identify independent risk factors for desaturation.
- ▶ **Conclusion:** In a tertiary care setting, it is not be possible to identify an algorithm that admits all children at risk of desaturation while permitting the discharge of a high percentage of patients.

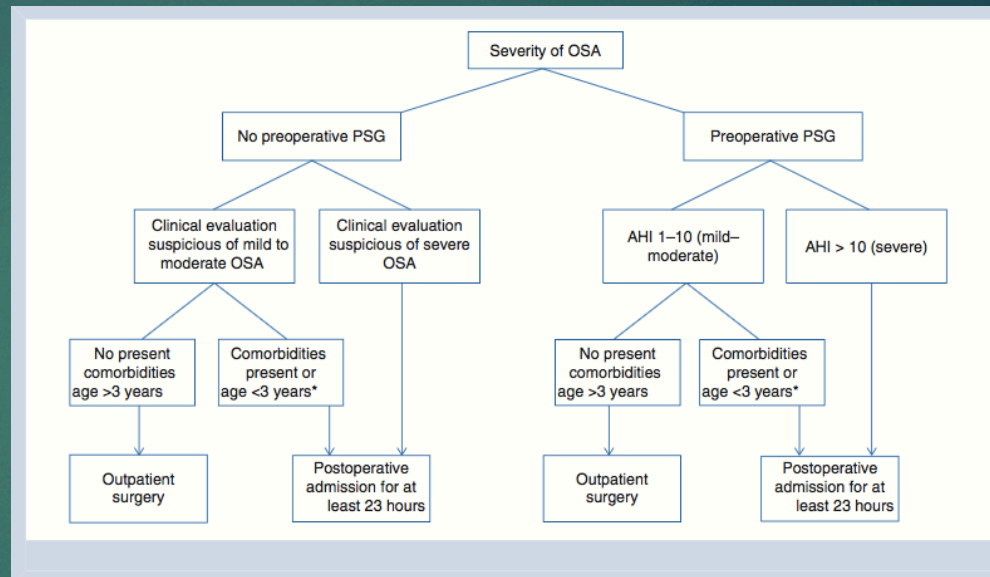
Wolfe, R. M., Pomerantz, J., Miller, D. E., Weiss-Coleman, R., & Solomonides, T. (2016). Obstructive sleep apnea: Preoperative screening and postoperative care. *Journal of the American Board of Family Medicine : JABFM*, 29(2), 263-275 <http://dx.doi.org/10.3122/jabfm.2016.02.150085>

**Table 5. Pediatric Obstructive Sleep Apnea Screening: "M SLEEPY" Questionnaire (Parent Version)\***

Q1: Is your child often irritated or angry during the day?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Q2: Body mass index >85%?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Q3: Does your child usually snore?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Q4: Does your child sometimes have labored breathing at night?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Q5: Ever noticed a stop in your child's breathing at night?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Q6: Does your child have enlarged tonsils and/or adenoids?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Q7: Does your child have problems with concentration?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Q8: Does your child often yawn or is he or she often tired/sleepy during the day?	<input type="checkbox"/> Yes <input type="checkbox"/> No

A score of 0 to 2 indicates a low risk of obstructive sleep apnea (OSA); high risk is indicated by a score  $\geq 3$  (sensitivity, 82%; specificity, 50%; negative predictive value, 85%). This questionnaire has not yet been validated in larger studies

From Ref. 59.



**Recommendation:** hospitals need to have standardized practice guidelines or order sets to guide the management of surgical patients with OSA. A U.S. survey (783 responses) found that only 27 % of respondents reported that their institution had a written policy for the perioperative care of patients with OSA



# Putting it all together for the SRNA

- ▶ Understand the risks brought on by OSA and by the T & A procedure
- ▶ Know your patients! Use the OSA specific tools of evaluating the patient such as I'M SLEEPY and AHI. It only adds a few steps to your preoperative evaluation.
- ▶ Be aware of the physiological changes (upregulation of MU receptors) brought on by OSA, while formulating anesthetic plan.
- ▶ For a T&A, judicious opioid administration is good! Multimodal pain management is even better!
- ▶ Be prepared to share the airway with the surgeon
- ▶ Airway management techniques save lives! Know your equipment, where to find it and how to use it.

# Putting it all together for the SRNA

- ▶ Anticipate some degree of airway obstruction postoperatively; secretions, swelling. Suction and reposition patient as necessary for transport to PACU to ensure airway patency.
- ▶ Patient is at risk for respiratory depression/airway obstruction all throughout the perioperative period, and beyond the post op period. With your anesthetic plan, set patient up for success that goes beyond the change in care provider.
- ▶ Be vigilant! No one can predict when an adverse event will happen, but every anesthesia provider should know how to recognize one, and how to treat it!



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