To review the diagnosis and indications for surgery for adenoid and tonsil hypertrophy

To review current tonsillectomy guidelines

To compare tonsillectomy techniques

I have no financial disclosures
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# Tonsil and Adenoid Hypertrophy: Symptoms

**Adenoids:**

- **Obstructive:**
  - Snoring/OSA
  - Mouth-breathing
  - Drooling
  - Decreased sense of smell
  - Dysphagia

- **Inflammatory:**
  - Sinusitis
  - Otitis media
  - Halitosis
  - Post-nasal drip / cough

**Tonsils:**

- **Obstructive:**
  - Snoring/OSA
  - Dysphagia

- **Inflammatory:**
  - Recurrent acute tonsillitis
  - Chronic tonsillitis
  - Tonsil stones / halitosis
  - PFAPA
Tonsil Hypertrophy
Tonsillectomy

Before

After
Tonsillectomy and Adenoidectomy: Expected Recovery

* **Adenoidectomy:**
  * Recovery between 3-14 days
  * Can tolerate oral diet well
  * Pain:
    * Usually mild
    * Usually short-duration
  * Complications:
    * Infection:
      * Halitosis, fever, neck stiffness
    * Regrowth

* **Tonsillectomy:**
  * 14 day recovery
  * Poor oral diet intake
    * Weight loss and dehydration
  * Pain:
    * Usually severe
    * Lasts 10 days
  * Complications:
    * Dehydration
    * Hemorrhage
      * Occurs in 4% of all patients
      * Most common day: post-op day #7
      * Can require hospitalization and further surgery
Tonsil Hypertrophy: Diagnosis

1+ (25%)

2+ (50%)

3+ (75%)

4+ (100%)
Adenoid Hypertrophy: Diagnosis

Adenoids *cannot* be seen on routine physical examination.

- **Endoscopy**
- **Imaging**
- **Educated guess**
2011: AAO-HNSF published clinical practice guideline for tonsillectomy in children (1 to 18 years old)

Feb. 2019:
* Guidelines updated
* Reviewed nearly 900 new studies
* Multi-disciplinary
Total of 15 Key Action Statements

Purpose of these statements:

- Produce optimal health outcomes for patients
- Minimize harm
- Reduce inappropriate variations in clinical care
Clinicians may recommend tonsillectomy for recurrent throat infection with a frequency of at least:

- 7 episodes in the past year
- Or at least 5 episodes per year for 2 years
- Or at least 3 episodes per year for 3 years
- With documentation in the medical record for each episode of sore throat and one or more of the following:
  - Temperature $>38.3^\circ C \,(101^\circ F)$
  - Cervical adenopathy
  - Tonsillar exudate
  - Positive test for GABHS
Even if patients don’t meet criteria, tonsillectomy can still be considered for:
- Multiple antibiotic allergies/intolerance
- PFAPA (periodic fever, aphthous stomatitis, pharyngitis, and adenitis)
- History of >1 peritonsillar abscess
- Chronic tonsillitis

Engage patients and families in shared decision-making about tonsillectomy.
Clinicians should ask caregivers of children with obstructive sleep-disordered breathing and tonsillar hypertrophy about comorbid conditions that may improve after tonsillectomy, including:

- Growth retardation
- Poor school performance
- Enuresis
- Asthma
- Behavioral problems
Before performing tonsillectomy, the clinician should refer children with obstructive sleep-disordered breathing for PSG if:

- < 2 years of age
- Comorbidities:
  - Obesity
  - Down syndrome
  - Craniofacial abnormalities
  - Neuromuscular disorders
  - Sickle cell disease
  - Mucopolysaccharidoses
- For whom the need for tonsillectomy is uncertain
- When there is discordance between the physical examination and reported severity of symptoms
Clinicians should recommend tonsillectomy for children with obstructive sleep apnea (OSA):

* To promote tonsillectomy as the primary surgical intervention for OSA in children
* Is in agreement with guidelines published by American Academy of Pediatrics and American Academy of Sleep Medicine
* Updated guideline has a stronger recommendation, based on further data showing tonsillectomy vs. observation results in significantly greater improvements in QoL and symptoms, including in patients with mild OSA (AHI < 5)
Clinicians should **not** administer or prescribe perioperative antibiotics to children undergoing tonsillectomy (Strong Recommendation)

- Randomized controlled trials and systematic reviews, showing no benefit in reducing post-tonsillectomy morbidity

Clinicians **should** administer a single intra-operative dose of IV dexamethasone to children undergoing tonsillectomy

- Less post-operative emesis
- Decreases throat pain
- Shorter time to resumption of oral intake
- (Based on randomized controlled trials and multiple systematic reviews)
Who Should Stay Overnight after Tonsillectomy?

* <3 years old
* Severe OSA (AHI \( \geq 10 \), O2 saturation nadir <80%, or both)
* Low threshold to also observe:
  * Cardiac patients
  * Down syndrome
  * Neuromuscular disorders
  * Failure to thrive
  * Craniofacial anomalies
  * Respiratory infection
  * Obesity (BMI >95\(^{th}\) percentile)
  * Behavioral factors
* Clinicians should recommend ibuprofen, acetaminophen, or both for pain control after tonsillectomy
  * Ibuprofen is a safe and effective analgesic for use after tonsillectomy (randomized controlled trials and systematic reviews)
* Clinicians must not administer or prescribe codeine after tonsillectomy in children younger than 12 years
  * To reduce life-threatening complications in children who are ultra-rapid metabolizers of codeine
* Guidelines do not address intra-capsular tonsillectomy
  * Acknowledge that it is frequently performed
  * Will eventually prepare a separate commentary
* Tonsillectomy: complete remove of tonsil, including capsule, leaving underlying pharyngeal muscles exposed to heal by secondary intention
* Intra-capsular tonsillectomy (e.g. tonsillotomy, partial tonsillectomy): avoids capsular disruption by only removing the obstructive tonsillar segment
Zhang et al. 2017:
* Systematic review of 32 studies comparing intra-capsular tonsillectomy vs. complete tonsillectomy for SDB

**Effectiveness:**
* Up to 4 years post-op, improved sleep study results in both groups; no difference between groups

**Post-operative hemorrhage:**
* Odds of a secondary hemorrhage: 79% less (4.2% vs. 0.84%)
* Incidence of hemorrhage requiring return to the hospital: (2 in 1000, vs. 14 in 1000)

**Post-operative pain:**
* 15 of 19 studies showed less post-operative pain (greatest difference in pain scores between post-op days #3-5)
* Intra-capsular: 2.8 day earlier return to normal diet; caregivers able to return to work 3 days earlier

**Readmission rates:** intra-capsular: 62% reduction (0.3%; tonsillectomy: 3.5%)

**Recurrent rates / tonsil re-growth:** unknown
Not much data demonstrating recurrence rates of infection

Reilly J, et al. (2007):
* Retrospective study of pediatric patients with chronic or recurrent tonsillitis:
  * No significant difference in rate of acute pharyngitis between the 2 groups (0.17 vs. 0.26 per year; mean follow-up: 2 years)

Riechelmann, et al. (2015):
* Adult subjects with chronic or recurrent tonsillitis randomized to receive either technique:
  * Outcomes assessed at 6 months post-op with tonsil and adenoid QoL instruement: identical scores between both groups
Role of Montelukast and Nasal Corticosteroid Spray

- Liming et al. April 2019:
  - Systematic review and meta-analysis of literature
  - 5/6 studies showed improvements in AHI and O2 nadir after montelukast, with/without nasal spray
    - Improvement in AHI was a trend
  - Significant heterogeneity among studies, limiting predictive value of data
  - Length of treatment: 6 to 16 weeks (optimal duration unknown)
  - Unknown whether children relapse after completing meds
  - Medical management may be reasonable, modestly effective short-term alternative for mild OSA in children
  - Montelukast: risk of neuropsychiatric events (nightmares, depression, anxiety)
Tonsillectomy and adenoidectomy are frequently performed surgeries for upper airway obstruction and recurrent infections.

Symptoms caused by tonsils vs. adenoids can be distinct.

Recovery from tonsillectomy vs. adenoidectomy is different.

Indications and peri-operative care becoming more standardized due to updated guidelines.

New ideas such as intra-capsular tonsillectomy and medical therapy are still being explored.
Thank You!!!