Beyond Adenotonsillectomy: Soft Tissue Surgery to Address Sleep Apnea

Cecille G. Sulman, MD
Professor & Chief
Division of Pediatric Otolaryngology
Medical College of Wisconsin
I have no disclosures
Objectives

- Review risk factors that may result in persistence or recurrence of sleep apnea.
- Understand drug induced sleep endoscopy as an evaluation tool.
- Discuss surgical therapies to treat pediatric OSA after T&A.
Tonsillectomy by the numbers

- Third most common surgery in the US: 530,000 / year.
- Habitual snoring: 10% of children aged 2-8 years.
- Non-obese and healthy children < 8 years: OSA in 1-3%.
- Obesity: 4-fold to 5-fold added risk for SDB.
- OSA more common among black and Hispanic individuals vs. white children: 3.5 times more likely to develop obstructive sleep apnea than whites.

American Academy of Otolaryngology Guidelines for T&A

Upper airway obstruction
Obstructive sleep apnea
Chronic tonsillitis
Peritonsillar abscess
Halitosis due to chronic tonsillitis
Unilateral tonsil hypertrophy
Hypertrophy causing dental malocclusion or adversely affecting oral-facial growth documented by orthodontist
Hemorrhagic tonsillitis

Flanary VA Laryngoscope 2003;113(10):1639-44
Cinar F Otol HNS 2004; 131:101-3
Who is at risk for failure?

In 60-100% PSG OSA resolves after T&A.

Gain velocity in BMI
Obesity BMI z score > 2
African American
Male gender
PSG severity
Craniofacial abnormalities
Trisomy 21
Cerebral palsy

Friedman Otolaryngology -- Head and Neck Surgery June 2009 140: 800

Mitchell. JAMA 2015;141(2):130-136
Evaluation of OSA after T&A

Polysomnogram

Imaging
  Lateral neck
  Cine MRI

Drug induced sleep endoscopy
Sleep endoscopy

Safe, feasible, and valid assessment of the upper airway.

Good interrater reliability.

Correlates with both AHI and lowest oxygen saturation on pre-procedural PSG.

Sleep endoscopy

No apnea

Adenotonsillar hypertrophy
Sleep endoscopy

No apnea

Circumferential collapse
DISE Outcomes

• Evidence is limited and focuses primarily on lingual tonsillectomy and supraglottoplasty.
• Reports regarding appropriate patient selection and outcomes in obese or otherwise healthy children are scant.
• Techniques have not yet been clearly linked to outcomes.

Surgical approaches

Nasal surgery
- Inferior turbinate reduction
- Septoplasty

Oropharynx
- Lateral expansion pharyngoplasty

Tongue base
- Lingual tonsillectomy
- Midline glossectomy
- Tongue base stabilization
- Geniohyoid suspension

Laryngeal
- Supraglottoplasty
- Epiglottopexy
Turbinate reduction

Microdebrider

Radiofrequency ablation
Turbinate reduction
Septoplasty
Expansion pharyngoplasty

Figure 4: Expansion sphincter pharyngoplasty technique. (A) Preoperative view of the oropharynx; (B) exposure of the palatopharynx (i.e., inferior turbinate); (C) elevation of the palatopharynx; (D) rotation and tunneling of the palatopharynx toward the hamulus; (E) suture suspension and approximation.
Expansion sphincter pharyngoplasty
Lingual tonsillectomy
Midline glossectomy
Tongue base stabilization
Geniohyoid suspension
Supraglottoplasty
Supraglottoplasty
Epiglottopexy
Epiglottopexy
Epiglottopexy
Epiglottopexy
Risks, benefits, complications...

- To stage or not to stage?
- Results may not be long-lasting
- Success rates lower in Down syndrome patients
Evaluating effectiveness and durability of surgical treatment for pediatric OSA.

Stratifying patient populations by age and risk factors of obesity or other co-morbidities.

Common language / definitions surrounding DISE.
Do:

Monitor for OSA after T&A in high risk populations

Consider DISE to direct therapy

Monitor outcomes
Don’t:

Lose patients to follow up as sleep apnea may recur
THANK YOU!