Objectives:
1. identify different types of obstruction that can cause OSA.
2. identify how sleep endoscopy can help with identifying the level of obstruction.
3. identify differing surgical approaches to OSA.
Obstructive Sleep Apnea: a Surgeons Perspective

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I will be talking about a non-FDA approved device.

I have a patent pending on this device.
OBSTRUCTIVE SLEEP APNEA

Estimated to affect 1-4% of all children
Obstructive Sleep Apnea (OSA)

- Cessation or 50% decrease in airflow in the presence of ventilatory effort during sleep. Associated with snoring, gasping and apneic pauses in breathing.
- Linked to daytime sleepiness, cardiovascular complications, hyperactivity, academic difficulties and failure to thrive.
- Estimated prevalence of 1-5% of the pediatric population in the US.
Tonsillectomy & Adenoidectomy

Primary treatment for most pediatric patients
Nonsurgical Treatment Options for OSA

- Positive Airway Pressure (gold standard)
  - Continuous (CPAP)
  - Bilevel (BiPAP)
  - Autotitrating (APAP)
- Behavioral interventions
  - Weight loss, positional therapy
- Oral appliances
  - Mandibular repositioning appliances
  - Tongue retaining devices
Persisting OSA after Adenotonsillectomy

Risk factors:
- Obesity
- Craniofacial Syndromes
- Hypotonia

Most common causes:
- Adenoid regrowth
- Lingual tonsillar hypertrophy
- Tongue base prolapse
- Laryngomalacia
- Septal deviation

Oral Cavity
Nasal Cavity
Pharynx
Supraglottic Larynx
Vocal Cords
Subglottic Larynx
Trachea & Bronchi
OSA and Craniofacial Syndromes

- OSA is often associated with congenital craniofacial syndromes
  - Pierre-Robin Sequence
  - Treacher Collins Syndrome
  - Hemifacial Microsomia

- Many patients are unable to find any commercially available CPAP mask that allows for the attainment of a functional mask-face interface.

- Patients that are unable to tolerate CPAP can require extensive craniofacial surgery and/or tracheostomy.
EVALUATION OF PERSISTING OSA

Sleep study

Medical examination

Fiberoptic nasolaryngoscopy

Sleep endoscopy
SLEEP ENDOSCOPY

1991 First described by Croft and Pringle

Performed in the operating room under general anesthesia usually in conjunction with direct laryngoscopy and bronchoscopy.
Surgical Treatment Options for OSA

- Nasal Procedures (Septoplasty)
- Oral, Oropharyngeal, Nasopharyngeal procedures (UPPP)
- Hypopharyngeal Procedures (Tongue reduction/advancement/stabilization)
- Maxillomandibular advancement
- Tracheotomy (most severe cases)
SURGICAL ALTERNATIVES

TRACHEOSTOMY AND MECHANICAL VENTILATION
Nasal obstruction

- Adenoid regrowth
- Deviated septum
- Nasolacrimal duct cysts
- Piriform aperture stenosis.
- Dermoids/Encephaloceles
- Teratomas
Choanal atresia

6 French tube should pass through nasal cavity bilaterally and be observed in the pharynx
Nasal Polyposis
Tongue Reduction
Laryngomalacia
Tracheomalacia
IMPROVEMENTS TO CPAP?
ONGOING CLINICAL TRIAL
Conclusions:

Airway management should be tailored to the site of the obstruction and consider the three purposes of the larynx: ventilation, protection and phonation.

Acute intervention may involve medical or surgical techniques.

Correct surgical selection is dependent upon identification of the underlying cause of upper airway obstruction, determination of its severity and determining which surgical procedures are most likely to result in improvement with the least degree of complication. More complicated airway cases often involve staging.
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