

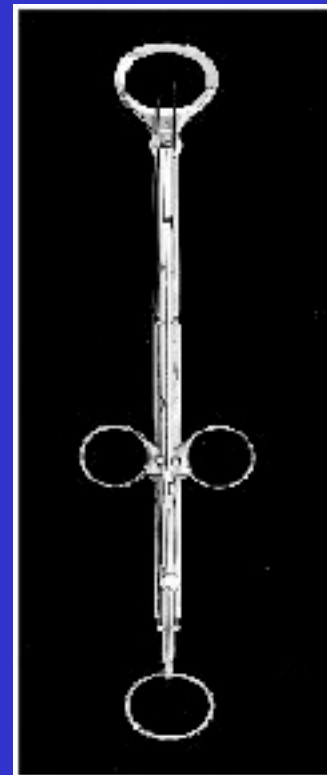
Tonsillitis, Tonsillectomy, and Adenoidectomy

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History

- Celsus 50 A.D.
- Caque of Rheims
- Philip Syng
- Wilhelm Meyer 1867
- Samuel Crowe



*Mathieu Tonsillotome,
circa 1920.
Gift of Marvin L. Lasky, MD*

Embryology

- 8 weeks: Tonsillar fossa and palatine tonsils develop from the dorsal wing of the 1st pharyngeal pouch and the ventral wing of the 2nd pouch; tonsillar pillars originate from 2nd/3rd arches
- Crypts 3-6 months; capsule 5th month; germinal centers after birth
- 16 weeks: Adenoids develop as a subepithelial infiltration of lymphocytes

Anatomy

Tonsils

- Plica triangularis
- Gerlach's tonsil

Adenoids

- Fossa of Rosenmüller
- Passavant's ridge



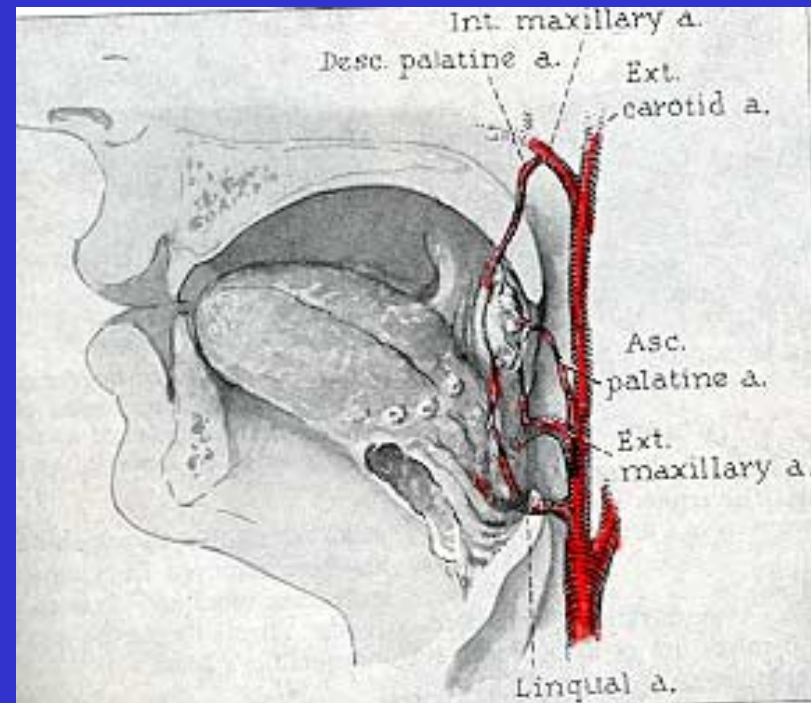
Blood Supply

Tonsils

- Ascending and descending palatine arteries
- Tonsillar artery
- 1% aberrant ICA just deep to superior constrictor

Adenoids

- Ascending pharyngeal, sphenopalatine arteries



Histology

Tonsils

- Specialized squamous
- Extrafollicular
- Mantle zone
- Germinal center

Adenoids

- Ciliated pseudostratified columnar
- Stratified squamous
- Transitional



Common Diseases of the Tonsils and Adenoids

- Acute adenoiditis/tonsillitis
- Recurrent/chronic adenoiditis/tonsillitis
- Obstructive hyperplasia
- Malignancy

Acute Adenotonsillitis

Etiology

- 5-30% bacterial; of these 39% are beta-lactamase-producing (BLPO)
- Anaerobic BLPO

GABHS most important pathogen because of potential sequelae

- Throat culture
- Treatment



Microbiology of Adenotonsillitis

Most common organisms cultured from patients with chronic tonsillar disease (recurrent/chronic infection, hyperplasia):

- Streptococcus pyogenes (Group A beta-hemolytic streptococcus)
- H.influenza
- S. aureus
- Streptococcus pneumoniae

Tonsil weight is directly proportional to bacterial load.

Acute Adenotonsillitis

Differential diagnosis

Infectious mononucleosis

Malignancy: lymphoma, leukemia, carcinoma

Diphtheria

Scarlet fever

Agranulocytosis

Medical Management

- PCN is first line, even if throat culture is negative for GABHS
- For acute UAO: NP airway, steroids, IV abx, and immediate tonsillectomy for poor response
- Recurrent tonsillitis: PCN injection if concerned about noncompliance or antibiotics aimed against BLPO and anaerobes
- For chronic tonsillitis or obstruction, antibiotics directed against BLPO and anaerobes for 3-6 weeks will eliminate need for surgery in 17%

Obstructive Hyperplasia

- Adenotonsillar hypertrophy most common cause of SDB in children
- Diagnosis
- Indications for polysomnography
- Interpretation of polysomnography
- Perioperative considerations

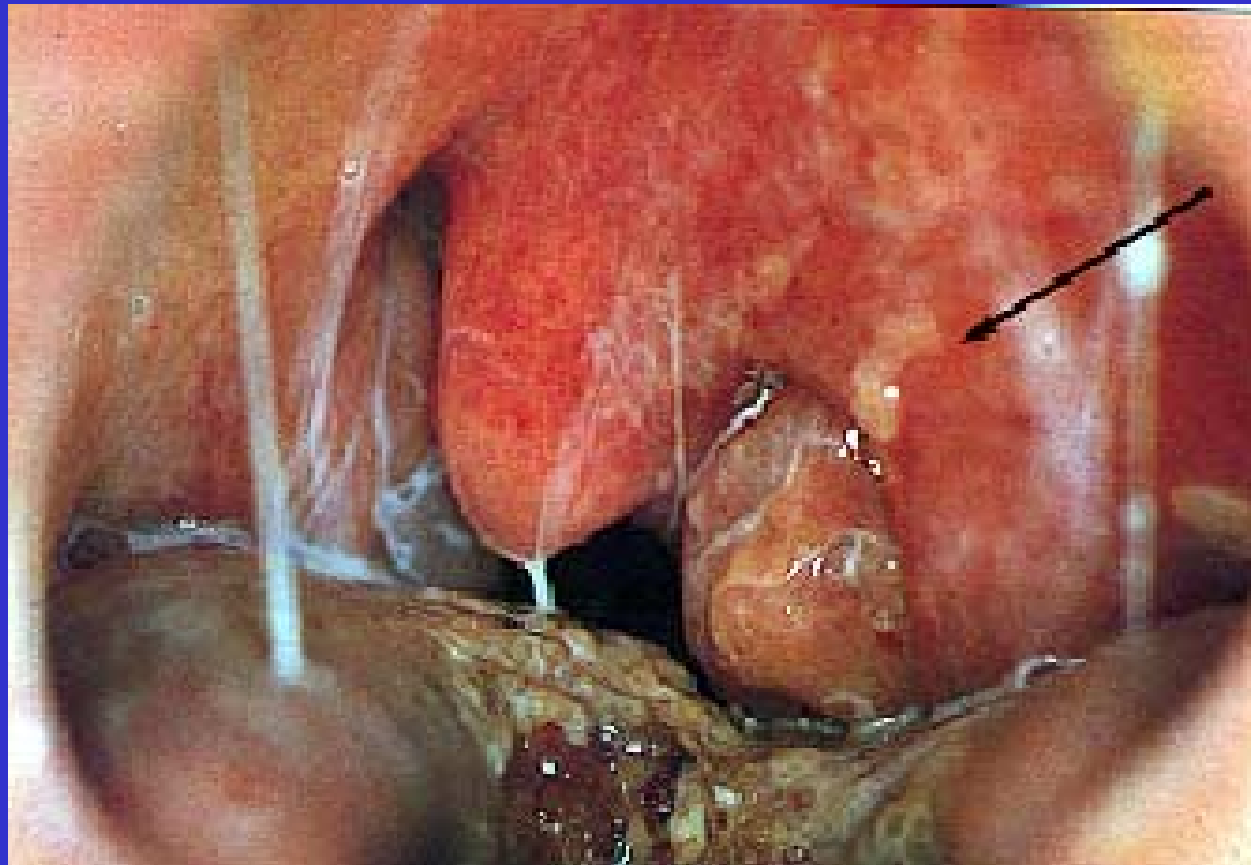
Unilateral Tonsillar Enlargement

Apparent enlargement vs true enlargement

Non-neoplastic:

- Acute infective
- Chronic infective
- Hypertrophy
- Congenital

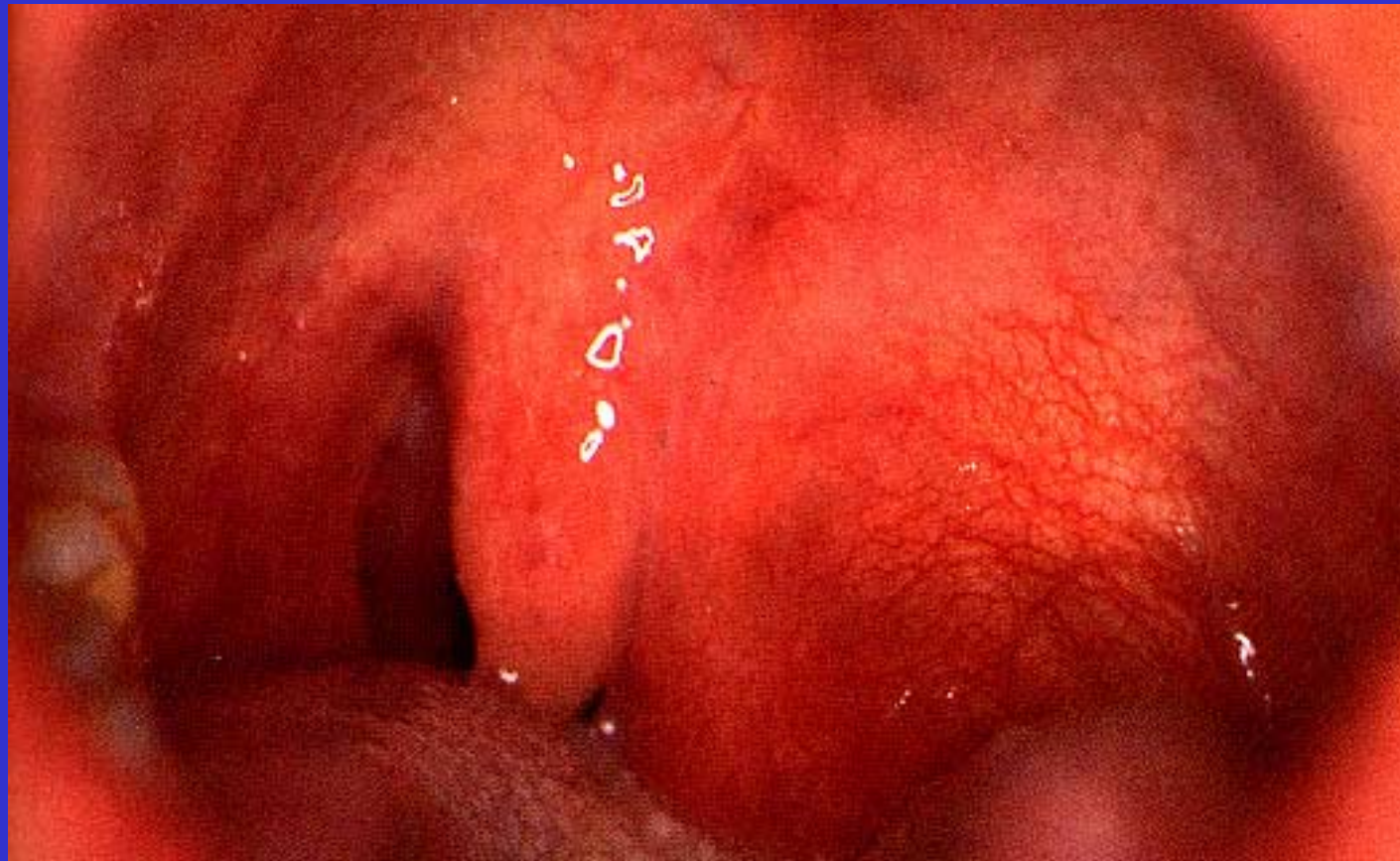
Neoplastic



Peritonsillar Abscess



ICA Aneurysm



Pleomorphic Adenoma

Other Tonsillar Pathology

- Hyperkeratosis, mycosis leptothrica
- Tonsilloliths





Candidiasis



Syphilis



Retention Cysts



Supratonsillar Cleft

Indications for Tonsillectomy; Historical Evolution



Indications for Tonsillectomy

Paradise study

- Frequency criteria: 7 episodes in 1 year or 5 episodes/year for 2 years or 3 episodes/year for 3 years
- Clinical features (one or more): T 38.3, cervical LAD (>2cm) or tender LAD; tonsillar/pharyngeal exudate; positive culture for GABHS; antibiotic treatment

Indications for Tonsillectomy

AAO-HNS:

- 3 or more episodes/year
- Hypertrophy causing malocclusion, UAO
- PTA unresponsive to nonsurgical mgmt
- Halitosis, not responsive to medical therapy
- UTE, suspicious for malignancy
- Individual considerations

Indications for Adenoidectomy

Paradise study (1984)

- 28-35% fewer acute episodes of OM with adenoidectomy in kids with previous tube placement
- Adenoidectomy or T & A not indicated in children with recurrent OM who had not undergone previous tube placement

Gates et al (1994)

- Recommend adenoidectomy with M & T as the initial surgical treatment for children with MEE > 90 days and CHL > 20 dB

Indications for Adenoidectomy

Obstruction:

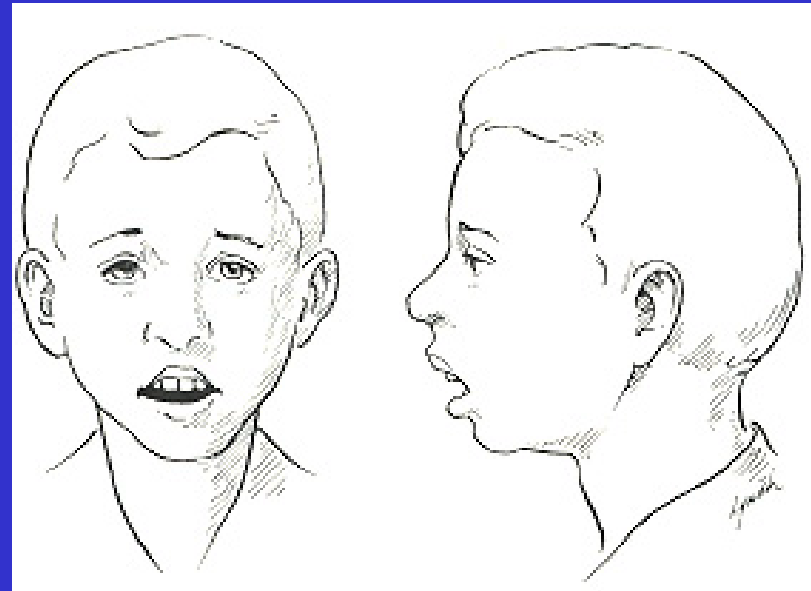
- Chronic nasal obstruction or obligate mouth breathing
- OSA with FTT, cor pulmonale
- Dysphagia
- Speech problems
- Severe orofacial/dental abnormalities

Infection:

- Recurrent/chronic adenoiditis (3 or more episodes/year)
- Recurrent/chronic OME (+/- previous BMT)

PreOp Evaluation of Adenoid Disease

- Triad of hyponasality, snoring, and mouth breathing
- Rhinorrhea, nocturnal cough, post nasal drip
- “Adenoid facies”
- “Milkman” & “Micky Mouse”
- Overbite, long face, crowded incisors



PreOp Evaluation of Adenoid Disease

Differential diagnoses

- Allergic rhinitis
- Sinusitis
- GERD
- For concomitant sinus disease, treat adenoids first

PreOp Evaluation of Adenoid Disease

Evaluate palate

- Symptoms/FH of CP or VPI
- Midline diastasis of muscles, bifid uvula
- CNS or neuromuscular disease
- Preexisting speech disorder?



PreOp Evaluation of Adenoid Disease

Lateral neck films are useful only when history and physical exam are not in agreement.

Accuracy of lateral neck films is dependent on proper positioning and patient cooperation.



PreOp Evaluation of Adenoid Disease



PreOp Evaluation of Tonsillar Disease

History

- Documentation of episodes by physician
- FTT
- Cor pulmonale
- Poststreptococcal GN
- Rheumatic fever

PreOp Evaluation of Tonsillar Disease

TONSIL SIZE

- 0 in fossa
- +1 <25% occupation of oropharynx
- +2 25-50%
- +3 50-75%
- +4 >75%



Avoid gagging the patient

PreOp Evaluation of Tonsillar Disease

Down syndrome

- 10% have AA laxity
- Obtain lateral cervical films (flexion/extension) when positive findings on history, PE
- If unstable, need neurosurgical evaluation preoperatively
- Large tongue and small mandible... difficult intubation
- Prone to cardiac arrhythmias/hypotension during induction

PreOp Evaluation for Adenotonsillar Disease

Coagulation disorders

- Historical screening
- CBC, PT/PTT, BT, vWF activity
- Hematology consult
- von Willebrand's disease
- ITP
- Sickle cell anemia

Principles of Surgical Management

Numerous techniques:

- Guillotine
- Tonsillotome
- Beck's snare
- Dissection with snare (Scissor dissection, Fisher's knife dissection, Finger dissection)
- Electrodissection
- Laser dissection (CO₂, KTP)

... Surgeon's preference

Post Operative Management

Criteria for Overnight Observation

- Poor oral intake, vomiting, hemorrhage
- Age < 3
- Home > 45 minutes away
- Poor socioeconomic condition
- Comorbid medical problems
- Surgery for OSA or PTA
- Abnormal coagulation values (+/- identified disorder) in patient or family member

Complications

#1 Postoperative bleeding

Other:

- Sore throat, otalgia, uvular swelling
- Respiratory compromise
- Dehydration
- Burns and iatrogenic trauma

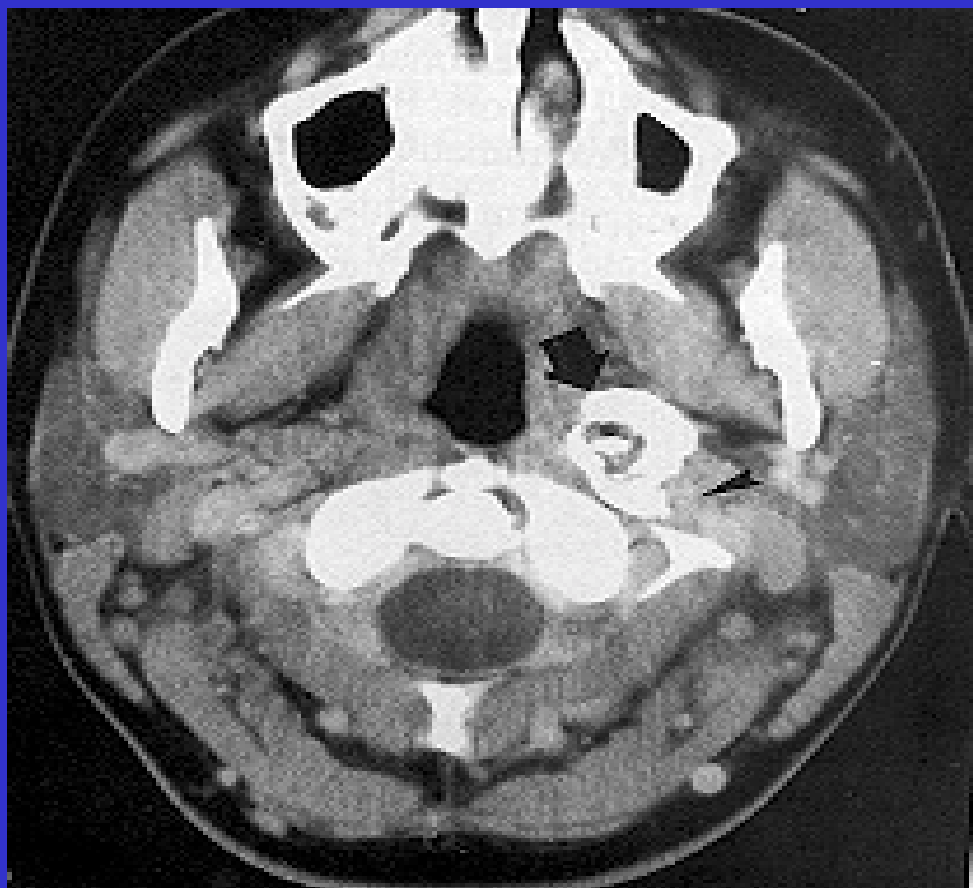
Rare Complications

- Velopharyngeal Insufficiency
- Nasopharyngeal stenosis
- Atlantoaxial subluxation/ Grisel's syndrome
- Regrowth
- Eustachian tube injury
- Depression
- Laceration of ICA/ pseudoaneurysm of ICA

Management of Hemorrhage

- Ice water gargle, afrin
- Overnight observation and IV fluids
- Dangerous induction
- ECA ligation
- Arteriography





Case study

- 13 year old female referred by PCP for frequent throat infections
- “She’s always sick. She’s been on four different antibiotics this year.”
- You call her pediatrician... he is out of town and his nurse can’t find the chart

Case study

- No known medical problems, no prior surgical procedures
- Takes motrin for menstrual cramps
- No personal history of bleeding other than occasional nose bleeds and extremely heavy periods.
- Family history unknown. Patient is adopted.

Case study

- Physical exam is unremarkable.
- Mom breaks down in tears when you tell her you do not have enough documentation of illness to warrant T & A. “I had to go on welfare because I’ve missed so much work from her being out sick.”
- You hesitate. She adds, “Her grades have dropped from all A’s to all F’s. If she misses any more school, she’ll be held back.”

Case study

- You confirm with her pediatrician that she has had 4 episodes of tonsillitis this year and agree to T & A.
- Because of her history of epistaxis and menorrhagia, you order a PT, PTT, CBC, BT.
- She has a mild microcytic anemia and prolonged bleeding time.
- You order vWF activity level and consult hematology

Case study

- She has a subnormal level of vWF, which responds to a DDAVP challenge (rise in vWF and Factor VII greater than 100%).
- You advise her to stop taking motrin.
- Before surgery, she receives desmopressin 0.3 microg/kg IV over 30 min and amicar 200mg/kg.

Case study

- She receives the same dose of DDVAP 12 hours postoperatively and every morning.
- Amicar is given 100mg/kg PO q 6 hr.
- Before each dose of DDAVP, serum sodium is drawn. Sodium levels drop to 130.
- Desmopressin is discontinued and substituted with cryoprecipitate.

Case study

- Patient presents to the ER on POD # 7 complaining of intermittent bleeding from her mouth.
- You order cryoprecipitate, draw a Factor VII level and CBC, and call her hematologist.
- Hemoglobin has dropped from 11.9 to 9.6.

Case study

- PE reveals no active bleeding; an old clot is present
- You establish IV access, admit the patient for overnight observation, have her gargle with ice water, and administer cryoprecipitate
- No further bleeding occurs, patient is discharged the next day