DISORDERS OF THE TONSILS & ADENOIDS

BY: DR. CATHERINE IRUNGU

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INTRODUCTION

- Tonsil and adenoid infection are very common in **childhood.**
- **Adenoid - Tonsil Surgery (ATS)** is the most commonly performed procedure in the history of surgery.
- For airborne antigens, the adenoids and tonsils are the 1st site of immunological contact.
- The tonsils are most immunologically active at **4 – 10 years** whereas, the adenoids are at **2 – 5 years.**

ANATOMY

- A tonsil is any collection of lymphoid tissue with **no afferent vessels** but has efferent vessels, unlike a lymph node.
- There are 3 main groups of lymphatic tissue in the head & neck:
  1. **WALDEYER'S RING**
  2. **TRANSITIONAL LYMPHATICS**
  3. **CERVICAL LYMPH NODES**

WALDEYER'S RINGS

- This is a **ring of lymphoid tissue** that is integral to immunoglobulin immunity.
- Composed of:
  1. **Adenoids/ Pharyngeal tonsils**
     - Are found on the posterior wall & roof of the naso - pharynx.
     - These **CANNOT** be seen from the oral cavity since the palate covers them. They can only be seen through the nasal cavity using endoscopy.
  2. **Tubal/ Eustachian tonsils**
     - Are found at the pharyngeal opening of the ET.
  3. **Palatine tonsils**
     - Embedded in the lateral wall of the oral pharynx on either side between the pillars of the fauces.
  4. **Lingual tonsils**
     - Lie at the base of the tongue just anterior to the epiglottis

BACTERIA & VIRUSES COMMONLY CUTURED FROM TONSILS & ADENOIDS

BACTERIA:

1. Aerobic

- Group A beta – hemolytic *Streptococci*
- Groups B, C & G (especially in the first year of life)
- *H. influenza, S. pneumoniae, M. catarrhalis, Staphylococci, Neisseriae, Mycobacteria.*

2. Aerobic

- *Peptostreptococci & Actinomyces*

- **NOTE: THE RATIO OF ANAEROBIC TO AEROBIC MICRO - ORGANISMS IS 10: 1. THE LATTER ARE HOWEVER NOT AS INFECTIOUS AS THE FORMER.**

VIRUSES:

- EBV
- Adenovirus
- Influenza A & B
- Herpes simplex virus

PHARYNGITIS

- Inflammation of the **oro - pharyngeal mucosa** which is composed of:
  - Soft palate
  - Palatine tonsils
  - Base of tongue
  - Posterior pharyngeal wall
- 70% of infections are **viral** and 30% are bacterial.

CLINICAL PRESENTATION:

- Odynophagia
- Dysphagia
- Tonsillar enlargement
- Exudates & petechiae
- Fever
- Lymphadenopathy

ADENOTONSILLAR DISEASE INCLUDES:

1. Adenoid infections
2. Adenoid hypertrophy
3. Tonsillar infections
4. Tonsillar hypertrophy
5. Neoplasia

ADENOID INFECTIONS & HYPERTROPHY

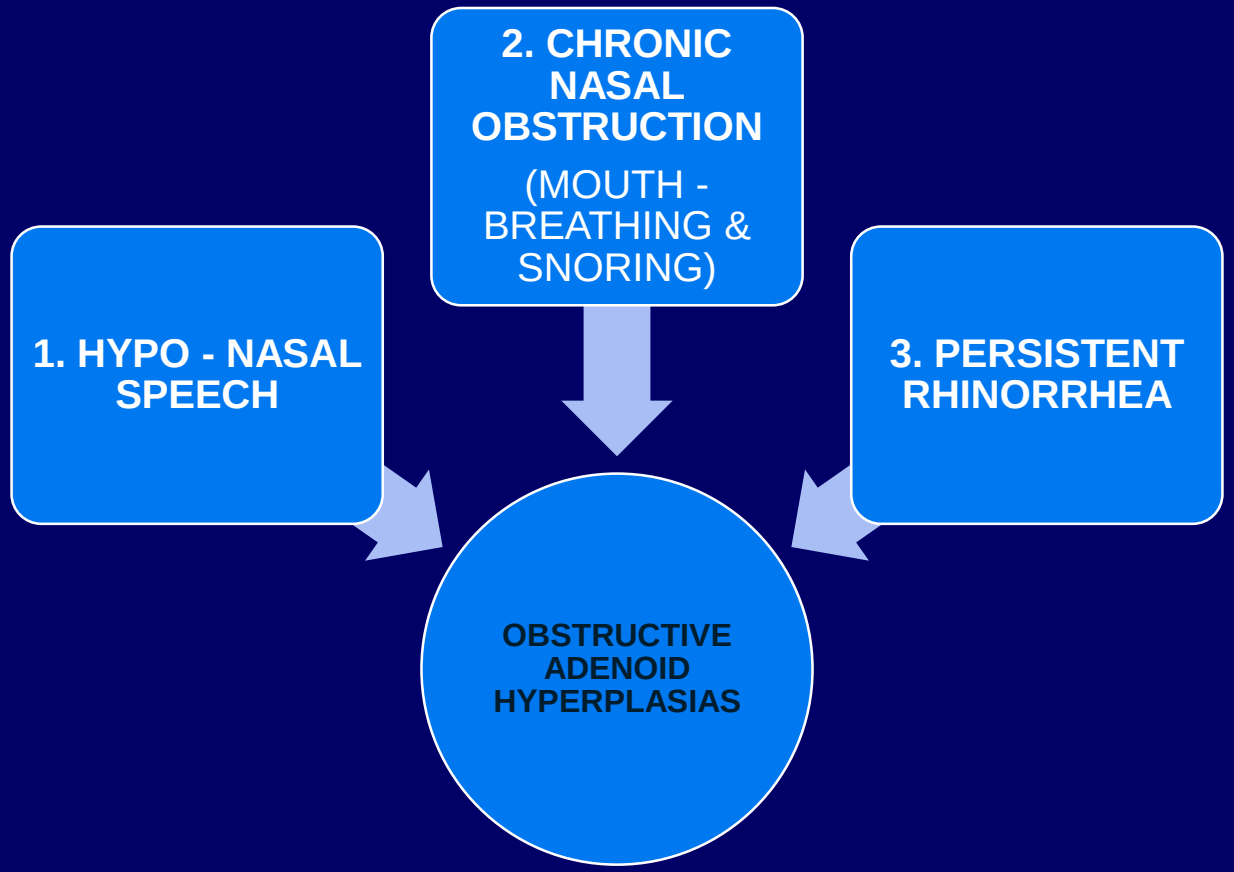
1. ACUTE ADENOIDITIS

- Characterized by
  - Purulent rhinorrhea
  - Nasal obstruction & mouth breathing
  - Snoring
  - Fever
  - Recurrent otitis media (ROM)
  - Rhino – sinusitits
- Consider GERD in a child < 2 years with recurrent infection

2. CHRONIC ADENOIDITIS

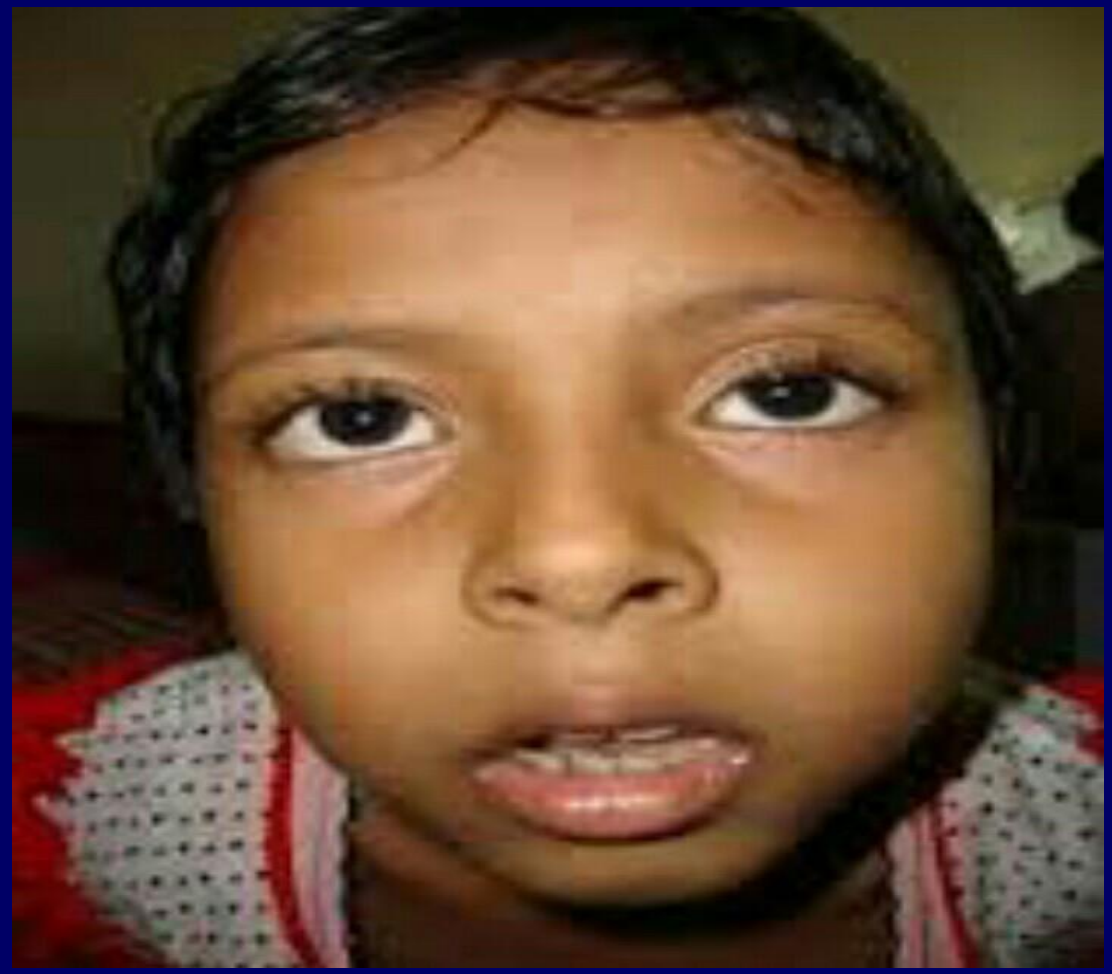
- This occurs if symptoms persist for **> 14 days.**
- It is characterized by
  - Persistent rhinorrhea
  - Post – nasal drip
  - Malodrous breath/ halitosis
  - Persistent or recurrent otitis media (OM)

2. OBSTRUCTIVE ADENOID HYPERPLASIA (TRIAD)



ADENOID FACIES

- Long, open – mouthed dull face
  - Hyper-somnolence
  - Mouth breathing
- Under - developed nostrils
  - Since the child becomes an obligate mouth breather
- Hypo - gnathic maxilla
- High arched palate
- Short upper lip
- Prominent crowded upper teeth



PATHOLOGICAL EFFECTS OF ADENOID HYPERTROPHY

- Snoring
- Craniofacial malformations
- Rhinorrhea (sinusitis)
- Recurrent otitis media
- Otitis media with effusion (OME)
  - Affects hearing
- Recurrent URTIs
  - Change in child’s play habit

UPPER AIRWAY OBSTRUCTION (UAO) MANIFESTATION

- Snoring and mouth breathing
- Sleep apnea
- Daytime hyper - somnolence
- Behavioral disturbances
- Pulmonary hypertension and cor pulmonale
- Failure to thrive
  - Due to poor appetite and resulting delayed milestones
- Enuresis
  - Sleep too deeply when they get to sleep
- Hyper - nasal/ hypo - nasal speech

TONSILLAR INFECTIONS & HYPERTROPHY

ACUTE TONSILLITIS

- This acute inflammation of the **palatine tonsils** usually due to ***Streptococcal*** or less commonly, to **viral infection**

CLINICAL PRESENTATION

- **Sore throat** & **pain** most marked when swallowing (dysphagia) & referred to the ears (tympanic branch of the glossopharyngeal nerve)
- High fever, malaise & headache

O/E

- Tender lymphadenopathy
- Erythema with a purulent exudate
- White membrane → thin, non – confluent & confined to the tonsil (peels away **without bleeding**)
  - Compare with diphtheria*

PERI - TONSILLAR ABSCESS

- Swelling **superior to the tonsil** accompanied by **tender lymphadenopathy**
- The **uvula is displaced** to **opposite** side

MANAGEMENT:

- Needle aspiration → 90%
  - If it is a frank abscess
- Incision & drainage
  - If recurrence occurs after needle aspiration
- Hydration
- Antibiotics
- Steroids

PROGNOSIS

- There is a 20% chance of recurrence after 1st episode and a 50% chance after the 2nd episode
  - Interval tonsillectomy is indicated in repeat abscess.

UNILATERAL TONSILLAR ENLARGEMENT

- It is often due to **asymmetric anatomic position** of tonsils.
- Atypical infections involved:
  - *Mycobacteria*
  - Fungi
  - Chronic actinomycosis
- R/O neoplastic disease in the following cases:
  - Change in voice (hot potato voice)
  - New – onset snoring
  - Dysphagia
  - Neck – lymphadenopathy
- Excision biopsy (tonsillectomy)
  - Histology
  - Cultures for aerobic, anaerobic and fungal organisms
- Imaging (before surgery)→
  - Extension beyond tonsillar capsule
- If neoplastic disease, it may probably be: **Squamous Cell Carcinoma** or **Lymphoma**.

HEMORRHAGIC TONSILLITIS

- **Recurrent bleeding** from prominent vessels in chronic tonsillitis
- It can be **diffuse parenchymal bleeding**
- Locally controlled in most patients
- Younger patients taken to theatre because of poor co - operation
- Tonsillectomy indicated if recurrent, anemic or not responsive to local control
- Rule out bleeding diathesis.

CHRONIC TONSILLITIS

- Chronic sore throat
- Mal - odrous breath
- Excessive tonsillar debris (tonsilloliths)
- Peri – tonsillar erythema
- Persistent **tender cervical lymphadenopathy**
- Common in: GERD, allergic pharyngitis

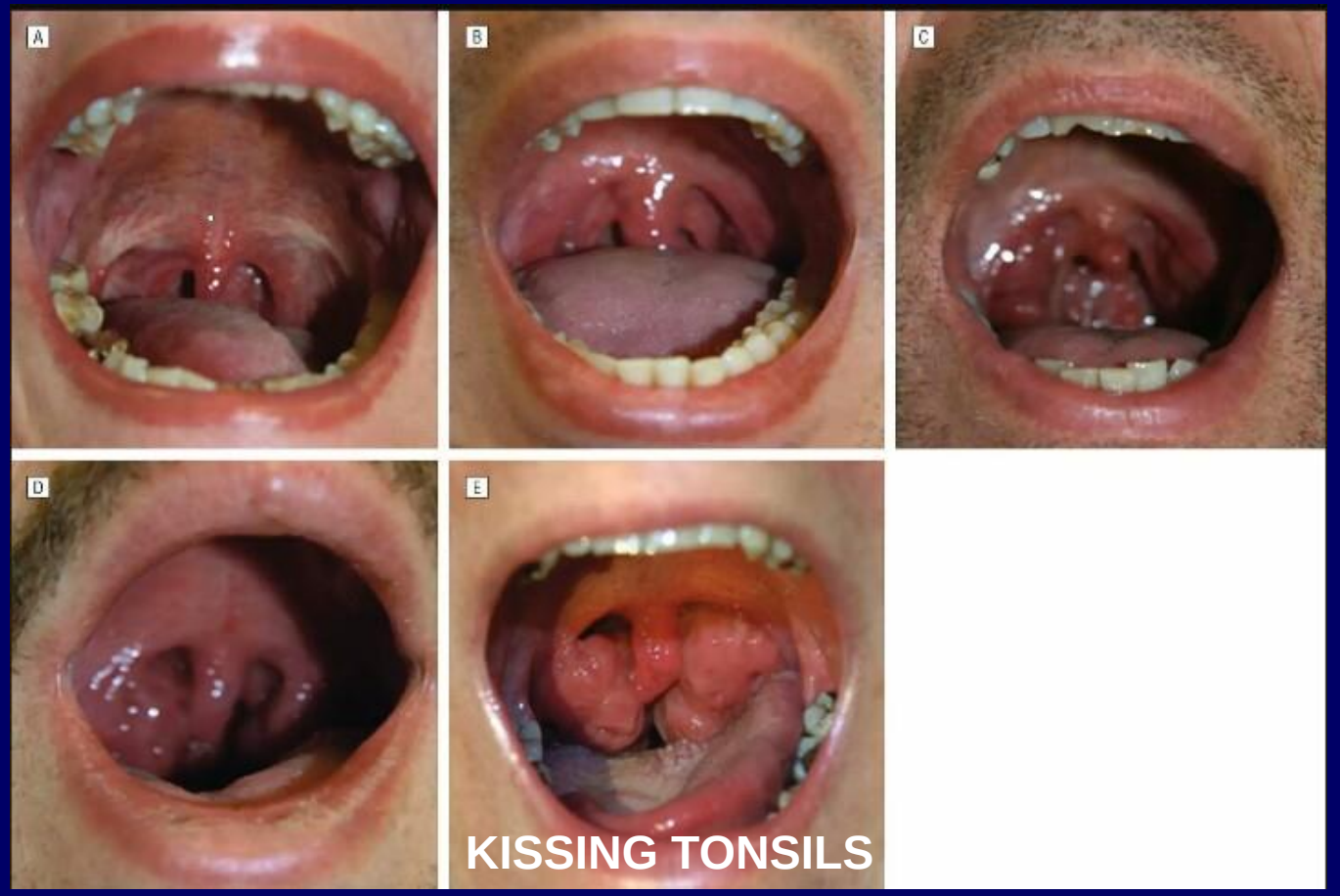
OBSTRUCTIVE TONSILLAR DISEASE

CLINICAL FEATURES

- Muffled voice
- Hyper - nasality
- Dysphagia
- Snoring / sleep disturbance
- Changes in craniofacial skeleton

GRADING OF THE SIZE OF TONSILS

- Grade A → Tonsils in fossa (0)
- Grade B → Tonsils less than 25% (+1)
- Grade C → Tonsils less than 50% (+2)
- Grade D → Tonsils less than 75% (+3)
- Grade E → Tonsils greater than 75% (+4)



NEOPLASMS/ MASSES

- **CONGENITAL**
  - Teratoma
  - Hemangioma
  - Lymphangioma
  - Cystic hygroma
- **BENIGN**
  - Lipoma
  - Fibroma
- **MALIGNANT**
  - Unilateral, fast enlargement, cervical LN+
  - Most common**: lymphoma**
  - Metastases → from other primaries e.g. melanoma, lung.

COMPLICATIONS OF TONSILLITIS

LOCAL

- Laryngeal edema → UAO
- Abscesses
  - Peri - tonsillar abscess
  - Para - pharyngeal abscess
  - Retro - pharyngeal abscess
- Suppurative adenitis
- Acute Otitis Media (AOM)
- Chronic tonsillitis

GENERAL

- Septicemia (the tonsils are a very vascular area)
- Febrile convulsions (absolute indication for surgery)
- Meningitis
- AGN
- ARF
- Guttate psoriasis

ASSESSMENT

- Clinical history
  - Snoring, recurrent URTI, sore throat
- Clinical examination
  - External exam face
    - craniofacial anomalies, adenoid facies
    - Crowded teeth; small nose; stained teeth; white, flaky and dry lips
    - Stigmata of allergy: Dark circles around the eye, crease on nose etc.
  - Anterior rhino – scopy
    - Use a torch
  - Assess for patency
    - Use metal spatula to block either nostrils (younger children)
    - Ask plder children to breathe heavily
  - Posterior rhino – scopy
    - Use endoscope

CONT.

- Oral cavity and oropharynx → tonsillitis, PTA
- Nose → rhinorrhea, HIT
- Ear → AOM, OME, retraction of tympanic membrane
- Neck → obvious masses, LN
- Chest → heart murmur, symptoms of RHD, congenital heart diseases
- Abdomen → Splenomegaly

CLINICAL FEATURES

- Pyrexia, malaise, headache, sore throat, dry throat, thirst.
- Voice change → hot potato, saliva accumulation
- Otalgia → referred pain, AOM, OME.
- Odynophagia, dysphagia
- Symptom duration 5 – 6 days

INVESTIGATION

- History and Physical examination
- FBC
  - Neutrophilia → Acute bacterial
  - Monocytosis → TB
  - Lymphocytosis → viral
- Throat swab → microscopy, culture & sensitivity
  - Throat swabs are frequently contaminated by oral flora therefore not routinely
- Serologic tests
  - If an immuno - deficient syndrome is suspected e.g. Hypo – gammaglobulinemia.
- **NOTE: In SCD, adeno - tonsillar disease should be treated as an emergency. This is because, infection can predispose the patient to dehydration, acidosis and hypoxia, all of which can precipitate a sickling crisis.**

DIFFERENTIALS

- Scarlet fever
- Diphtheria
  - The membrane is dirty grey, thick & tough; it **bleeds if peeled away**.
  - Diphtheria is uncommon due to immunization
- Infectious mononucleosis
  - This is associated with micro - petechiae of the soft palate; atypical lymphocytes on smear and a **positive monospot test**.
- Leukemia
- Agranulocytosis
- Atypical mycobacteria, fungi, actinomycosis
- Vincent's angina/ Trench mouth
  - Characterizes by superficial, painful ulcers with erythematous borders
- Malignancies
- Fungi, syphilitic gumma, TB, leprosy, leishmaniasis
- Crohn's disease

SEQUELAE

1. Upper airway obstruction (UAO)
2. Para - nasal sinus disease
3. Craniofacial malformations
4. Otologic disease (Otitis)
5. Cardiac disease

1. UAO

- Increased PCO2 → Decreased PO2 → Reflex VC in pulmonary circulation in response to relative hypoxia → Pulmonary HTN → **Cor pulmonale.**
- Adeno - tonsillar disease is common in children after otitis media
- In children presenting for adeno - tonsillar surgery, Pulmonary HTN is most common.

TREATMENT

- Medical
  - Rest, rehydrate, analgesics → sufficient in mild cases
  - Benzyl penicillin IV/ IM then continue with oral penicillin V
  - OR erythromycin, sulphonamides (for community acquired adeno - tonsillar disease)
  - Resistant cases → consider clindamycin, ciprofloxacin +/- metronidazole (anaerobic)
- Surgical (recurrent disease)
  - Tonsillectomy & Adenoidectomy (T & A)

HIGH RISK GROUPS AFTER SURGERY (ADMIT AND MONITOR FOR 24 HOURS POST - OP)

- < 3 years old
- Severe Obstructive Sleep Apnea (OSA)
- Bleeding disorders e.g. hemophilia, VWD, on warfarin
- ISS
  - High dose steroids, HIV, congenital
- Infections
- Fever
- Malnutrition < 80% of expected weight for age
- Cor – pulmonale
  - An episode or previous history

2. PARANASAL SINUS DISEASE (IMAGING)

- Maxillary sinusitis can result.
- Plain X ray: (Water's view)
  - Maxillary sinusitis
    - Fluid level & a meniscus in the affected maxillary sinus
- CT scan
  - Enlarged turbinates
  - Opacification in the affected sinus

3. CRANIOFACIAL MALFORMATIONS

- Long, open – mouthed dull face
  - Hyper-somnolence
  - Chronic mouth breathing
- Under - developed nostrils
  - Since the child becomes an obligate mouth breather
- Micro - gnathia
- High arched palate
- Short upper lip
- Prominent crowded upper teeth

4. OTITIS

- This is inflammation of the middle ear
- Classification:
  - Acute otitis media (AOM)
    - Usually a bacterial infection accompanied by a viral URTI; rapid onset of signs & symptoms
  - **Recurrent AOM**
    - AOM for 3 or more months in 6 months or for 4 or more months in 1 year
  - **Otitis Media with Effusion (OME)**
    - Painless hearing loss and intermittent purulent ear drainage that follows AOM or arises without prior to AOM
  - Chronic OME
    - Persistent otorrhea present for > 6 weeks

OTITIS MEDIA WITH EFFUSION

- Mechanical obstruction of Eustachian Tube (ET) opening
- Chronic AOM causing effusion
- Eustachian Tube dysfunction
- Air bubble in the middle ear

5. CARDIAC DISEASE ECHOCARDIOGRAM OF OSA

- Hypertrophy of right side of heart
- Engorged vasculature of pulmonary
- Pulmonary HTN

TONSILLECTOMY & ADENOIDECTOMY

RECURRENT ACUTE TONSILLITIS: PARADISE CRITERIA FOR TONSILLECTOMY

1. **MINIMUM FREQUENCY OF SORE THROAT EPISODES**:
   - At least 7 separate episodes in 1 year
   - At least 5 separate episodes/ yr in 2 years
   - At least 3 separate episodes/ yr in 3 years
2. **CLINICAL FEATURES**
   - Sore throat plus 1 of the following:
     - Fever > 38.4^{o}C
     - Cervical adenopathy (tender LN)
     - Tonsillar/ pharyngeal exudate
     - Culture positive for GAS
3. **TREATMENT**
   - Antibiotics administered in the conventional dosage for proved or suspected *streptococcal* episodes.

- NOTE: **REDNESS IN THE PHARYNX MEANS NOTHING IN A CHILD IN THE ABSENCE OF AN EXUDATE! DO NOT PRESCRIBE AN ANTIBIOTIC.**

AMERICAN ACADEMY OF OTOLARYNGOLOGY GUIDELINES (HNS GUIDELINES)

- Absolute indications for surgery:
  - Enlarged tonsils
  - Repeat peri - tonsillar abscess
  - Tonsillitis with febrile convulsions
  - Tonsils requiring abscess
- Relative indications
  - > 3 infections in a year
  - Persistent halitosis
  - Chronic or recurrent tonsillitis in a streptococcal carrier not responding to beta - lactamase resistant antibiotic
  - Unilateral tonsillar hypertrophy

METHODS USED IN T & A

MOST COMMON

- Cold knife
- Electro – cautery

OTHERS

- Coblation
- Harmonic scalpel
- Laser

COLD KNIFE

- **GOLD STANDARD**
- Less post – operative pain
- Post – tonsillectomy hemorrhage less common than electro - cautery
- Least expensive
- More intra-operative blood loss
- Cause bacteremia
- Takes longer

ELECTROCAUTERY

- Types:
  - Mono - polar cautery
  - Bipolar cautery

PERI – OPERATIVE MANAGEMENT

- Steroids
- Bismuth/ Afrin
  - Coagulant
  - Reduces likelihood of post-operative bleeding
  - Aspiration → death therefore not used in Kenya
- Post – operative antibiotics
- Post – operative pain control
  - Paracetamol
  - Narcotics
  - NSAIDs
  - Extremely severe in day 3 → day 7 therefore give tramadol.
- Good hydration
- Move from liquid to semisolid to solid → as per patient's ability
- Avoid smoking → delays healing and predisposes to infections
- Avoid valsalva maneuvers.

CONTRAINDICATIONS

- Acute tonsillitis
  - If elective, postpone until acute tonsillitis resolves.
  - This prevents super – infection of the surgical wound
- Short palate
  - Don’t remove adenoids in a child with a cleft palate because of the risk of aggravating the **velo - pharyngeal incompetence** and causing **hyper - nasal speech** & **nasal regurgitation**
- Bleeding disorder

COMPLICATIONS OF ADENOIDECTOMY

- Fever
- Vomiting
- Dehydration
- Airway obstruction
- Pulmonary edema
- Hemorrhage
- Hyper - nasal speech
- Velo - pharyngeal incompetence
- Dental injury
- Burns
- Nasopharyngeal stenosis
- Atlanto -axial subluxations (Down’s syndrome)

COMPLICATIONS OF TONSILLECTOMY

- Hemorrhage
- Hyper – nasal speech
- Dehydration
- Laryngeal edema

Typed by Effie Naila

'Watch the way you talk. Let nothing foul & dirty come out of your mouth. Say only what helps. Let each word of yours be a gift'

Eph. 4:29 (*The Message Bible*)

Jesus' words encourage us to **skip the rude comebacks, stop blaming others** & to **pause before we react.**