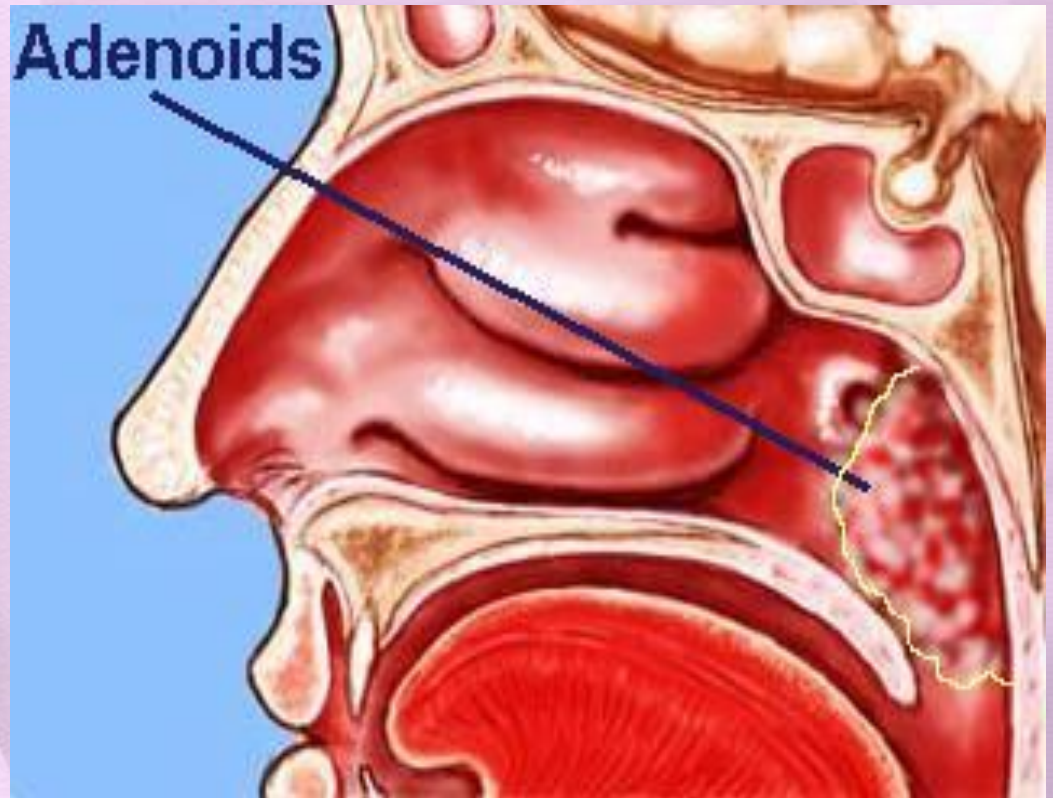


ADENOIDS



Dr. Vaishali Sangole

ADENOIDS

- Adenoids are subepithelial collection of lymphoid tissue in the nasopharynx at the junction of the roof and the posterior wall of nasopharynx.
- Subepithelial collection around the pharynx-Waldeyer's ring.
- Surface is characterized by vertical ridges and furrows(5-6) covered by ciliated columnar epithelium. Palpation of adenoids reveals appearance of 'Bag of worms'.
- Adenoid tissue is present at birth, shows physiological enlargement upto the age of six years, and then tends to atrophy at puberty and almost completely disappears by the age of 20.

WLLDEYAR'S RING

Collection of lymphoid tissue present at the inlet of pharynx/oroharynx.
Comprising of two rings.

A) INNER RING-

1. Adenoids- Nasopharynx.
 2. Faucial tonsils known as TONSILS.
 3. Tubal tonsils in Fossa of Rosenmuller behind the opening of ET.
 4. Lingula tonsils present over the Posterior $1/3^{\text{rd}}$ of tongue.
- Since arranged in a ring like manner-Waldeyer's.

B) OUTER RING-

1. Retropharyngeal LN
2. Lateral pharyngeal- behind posterior faucial pillar
3. LN on posterior pharyngeal wall.
4. Submental, Submandibular LN.
5. Preauricular, infraauricular and posrauricular LN.
6. Styloid group of LN
7. LN behind and anterior to sternomastoid
8. LN at bifurcation of carotid
9. Hyoid group of LN

WILLDEYAR'S RING

NASOPHARYNGEAL tonsils : commonly called “adenoids” is a subepithelial collection of lymphoid tissue at the junction of the roof and the posterior wall of the nasopharynx. It is composed of vertical ridges of lymphoid tissue separated by deep clefts and covered by ciliated columnar epithelium. They have no crypts and no capsule. Adenoid tissue is present at birth, show physiological enlargement upto the age of six years, and then tends to atrophy at puberty and almost completely disappears by the age of 20 yrs.

WALDEYAR'S RING

PALATINE Tonsils: are two in number. Each tonsil is an ovoid mass of lymphoid tissue situated in the lateral wall of oropharynx between the anterior and posterior pillars. Actual size of the tonsil is bigger than the one that appears from its surface as parts of tonsil extend upwards into the soft palate, downwards into the base of tongue and anteriorly into palatoglossal arch. A tonsil presents two surfaces- a medial and a lateral, and two poles- an upper and a lower.

TUBAL Tonsils: subepithelial collection of lymphoid tissue at the tubal elevation. It is continuous with adenoid tissue and forms a part of the Waldey's ring. When enlarged due to infection, it causes ET occlusion.

WLLDEYAR'S RING

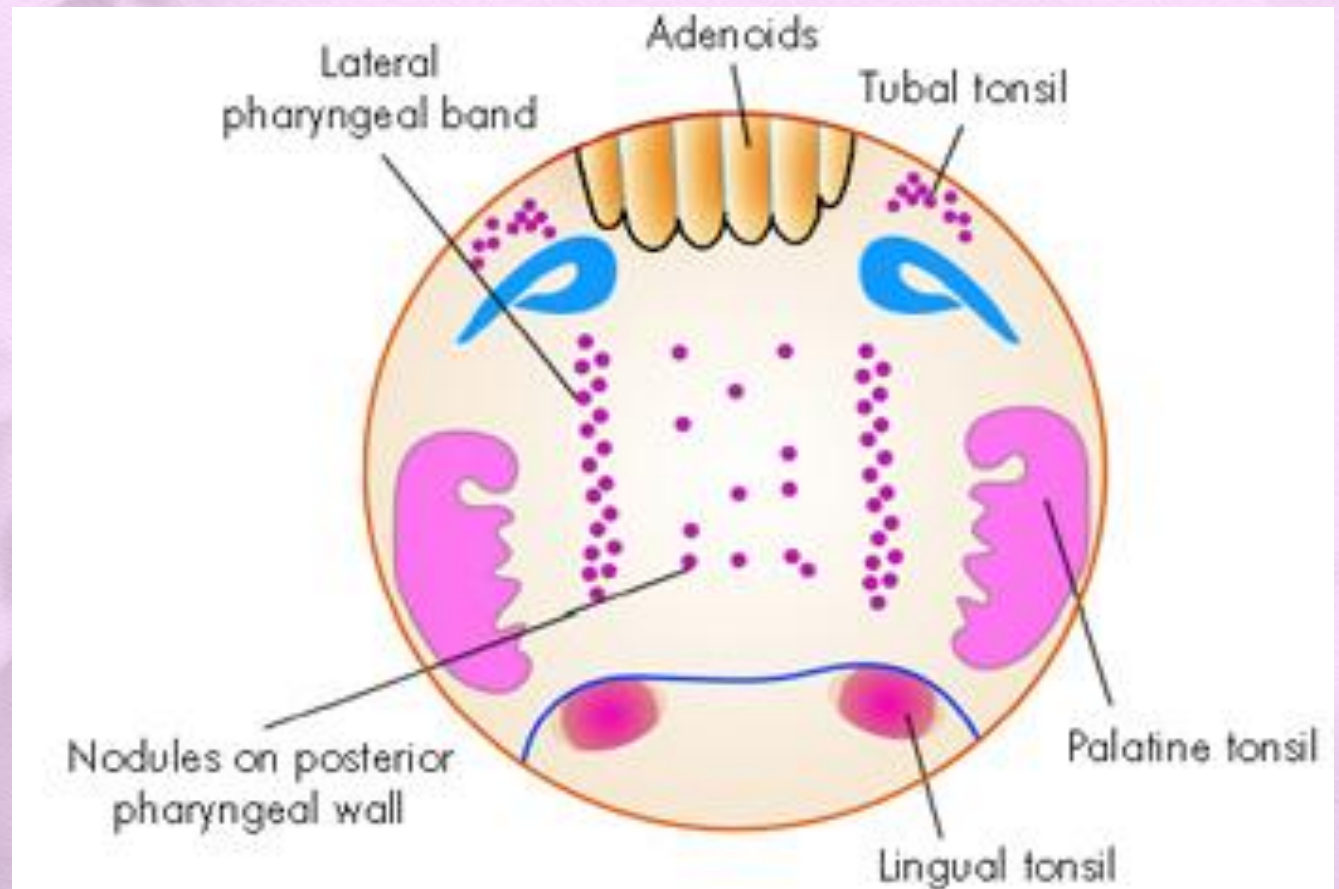


Fig. 46.2 Waldeyer's ring.

DIFFERENCE BETWEEN ADENOIDS & TONSILS

	ADENOIDS	TONSILS
LOCATION	NASOPHARYNX	OROPHARYNX
NUMBER	SINGLE	PAIRED
LINING	PSEUDOSTRATIFIED CILATED COLUMNAR EPITHELIUM	STRATIFIED SQUAMOUS EPITHELIUM
CAPSULE	NO CAPSULE	HAVE A PSEUDOCAPSULE ON THE SURFACE.
CRYPTS	NO CRYPTS	PRESENCE OF CRYPTS WHICH ARE TUBE LIKE INVAGINATIONS FROM THE SURFACE OF EPITHELIUM.
EFFERENTS	HAS AFFERENTS AS WELL AS EFFERENTS.	NO EFFERENTS
LYMPHATIC DRAINAGE	DRAIN INTO UPPER JUGULAR NODES DIRECTLY OR INDIRECTLY VIA RETROPHARYNGEAL NODES AND PARAPHARYNGEAL NODES	DRAIN INTO UPPER DEEP CERVICAL NODES-THE JUGULODIGASTRIC NODES- BELOW AT THE ANGLE OF MANDIBLE.

INFECTIONS OF ADENOIDS

- Infection of the adenoids could be Acute or Chronic.
- They produce symptoms either because of enlargement due to physiological changes or because of Infection. In both the situations they are termed 'Enlarged Adenoids' or 'Adenoiditis'. The term adenoiditis or chronic adenoids are not very accepted since it is hyperplastic changes which occur in adenoids.
- Acute adenoiditis seen mostly with URI.
- Adenoid tissue is present at birth, regresses at puberty since acute adenoiditis occurs in child upto 12 years of age, commonly in 3-7 yrs of age group as the child is exposed to maximum infection since they are concerned with immunity and protection against infection.

AETIOLOGY

- 1. Infection due to B- haemolytic Streptococcus occasionally by H. influenza.
- 2. Also infection from Nose or Sinuses spread the adenoids producing obstructive symptoms.
- 3. Allergy of the nose/URT- enlargement of the Adenoids.

CLINICAL FEATURES

- 1. Disease is common on children below 14 years of age. Most marked at the age of 2 and 6 years of life.
- NASAL
- Nasal obstruction-difficulty in breathing – worst at night. Nasal obstruction could be bilateral. Mouth breathing
- Nasal discharge- Muroid or mucopurulent, does not disappear completely even after treatment.
- Epistaxis could be bilateral, spontaneous or characteristically Nocturnal due to congestion over adenoids.
- Acute Sinusitis: since drainage of sinuses blocked/secondary sinusitis.
- EAR
- Intermittent pain- More marked at night. Becomes worse during an episode of URTI.
- Unilateral or Bilateral impairment of hearing/blocked sensation.
- Ear discharge- Mucopurulent, Moderate – Profuse, Non- foul smelling.
- These symptoms occur as a result of obstruction of the Eustachian tube or because of spread of infection from the Nasopharynx to the middle ear.

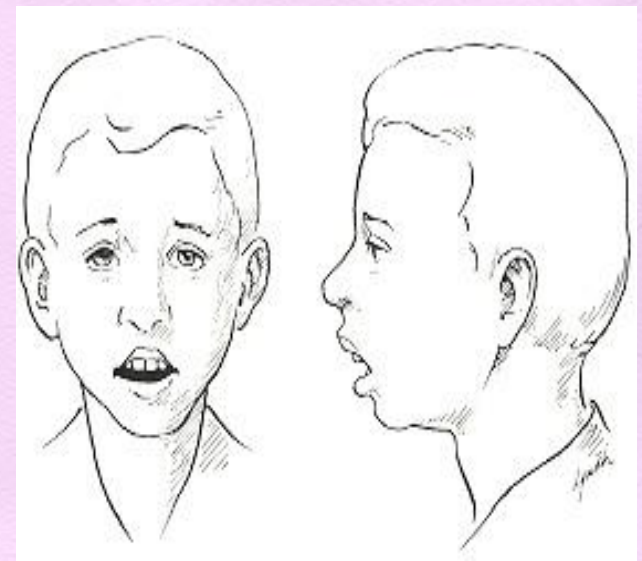
CLINICAL FEATURES

GENERAL

- a) Headache, malaise, fever.
- b) Change in voice- Hypernasality known as Rhinolalia aperta or Hyponasality known as Rhinolalia clausa.
- c) Irritability
- d) Taking unduly long time in going to sleep or taking a meal
- e) Usually prefers liquids
- f) Unable to concentrate
- g) Lags behind in studies
- h) Obstructive sleep apnoea syndrome of varying degrees- child has restless sleep, keep on peeping around night, wakes at midnight due to airway obstruction.
- i) pain in abdomen- if secretions are swallowed- mesenteric lymphadenopathy.
- j) Cough- due to post nasal drip.

EXAMINATION

- Reveals features of 'Adenoid Features' which means
- Dull expressionless face
- Open mouth
- Drooling of saliva
- Protruding of upper incisors
- Obliteration of nasolabial fold.
- Constant thick nasal discharge
- Pinched up nose
- High arched palate
- Nasal discharge



EXAMINATION

EXAMINATION OF NOSE

- Decreased air intake
- Decreased airways on both sides
- Presence of mucopus
- Nasal mucosa is normal
- Posterior Rhinoscopy- a mass in the nasopharynx on the roof of it.

EXAMINATION OF THE EAR

- Presence of fluid behind the intact tympanic membrane- is seen either in the form of concave airline or presence of an air bubble.
- Patient has conductive hearing loss which may be unilateral or bilateral.
- Features of ASOM are present
- There may be presence of a central perforation.

DIFFERENTIAL DIAGNOSIS

- Done from other diseases producing mouth breathing
- Nasal-DNS, Polyp, Chronic sinusitis, Vasomotor sinusitis, Choanal atresia.
- Dental abnormalities-Narrow upper jaw, wedge shaped face, crowded teeth.
- Nasopharyngeal-Cysts and tumours-Thorwaldt's cyst, nasopharyngeal fibroma.

MANAGEMENT



- **INVESTIGATIONS**
- **SPECIFIC**

X-ray lateral view for evidence of Soft tissue

Soft tissue mass is seen arising from the roof of nasopharynx

Nasopharyngeal air column will be reduced.

- **TREATMENT**

Initially conservative

Antibiotics-Penicillin 125 mg QID for 7 days.If patient is resistant to penicillin

Nose drops 0.5% ephedrine saline nose drops.

Capsule of Vit A and D for 1 month.

If no response to Conservative treatment- Surgery in the form of Adenoid curettage under GA .

DIFFERENTIAL DIAGNOSIS OF WHITE MEMBRANE IN THROAT

ACUTE MEMBRANOUS TONSILLITIS/ ACUTE
FOLLICULAR TONSILITIS

ACUTE STREPTOCOCCAL TONSILLITIS (Scarlet
fever)

INFECTIOUS MONONUCLEOSIS

DIPHTHERIA/ FAUCIAL DIPHTHERIA

VINCENT'S ANGINA

ORAL THRUSH

QUINCY

AGRANULOCYTOSIS

LEUKAEMIA

POST TONSILLECTOMY SLOUGH

MALIGNANCY TONSIL.

KERATOSIS PHARYNGEUS

MEMBRANOUS TONSILLITIS

It is a stage further of acute follicular tonsillitis when exudation from crypt coalesces to form a membrane on the surface of tonsil.

It is due to pyogenic organisms.

An exudative membrane forms over the medial surface of the tonsils, along with features of tonsillitis.



STREPTOCOCCAL TONSILLITIS

Scarlet fever

Associated with High grade fever.

In streptococcal infection the tonsils often swell and become coated and the throat is sore. The patient has a temperature, foul-smelling breath and may feel quite ill.

Pulse is proportionate.

Toxaemia-Minimal and directly proportional to the severity of fever.

Examination reveals bilateral membrane strictly limited to the surface of the Tonsils.

The differences are variable and it is impossible to tell on inspection if the infection is due to a virus or a bacterial.



INFECTIOUS MONONUCLEOSIS

Glandular fever is due to Epstein- Barr virus.
may resemble a severe attack of acute
tonsillitis

Much commoner in older teenage children than
younger child.

Signs& Symptoms

They may be quite unwell with very large and
purulent tonsils and a long-lasting lethargy.

Fever

white irregular membrane covering one or both
tonsils may form over the tonsils and may be
multiple areas of involvement

Lymphadenopathy is marked-posterior triangle.

Palatal petechiae, liver damage, rash.

Hepatosplenomegaly after 3-4 days.

INFECTIOUS MONONUCLEOSIS

Peripheral blood shows an increase in atypical lymphocytes in a leukocytosis. Lymphocytosis- more than 50% lymphocytes of which 10% are atypical. TLC_ Leucocytes predominate 4500/ cumm.

Paul Bunnell test is positive after one week. Repeated after 2-3 weeks.

Attention to disease is attracted because of failure of antibiotic treatment with persisting sore throat and malaise.

Hypersensitivity to ampicillin is increased in infectious mononucleosis, and the antibiotic should be avoided as severe urticaria follows its use.

The positive Paul-Bunnell blood test is diagnostic, and atypical mononuclear white cells are increased on the blood film.

Treatment is symptomatic and may include artificial airways and high dose steroids.



INFECTIOUS MONONUCLEOSIS

Membrane characteristic of infectious mononucleosis is seen on the lingual tonsil, or, as in this case, on a prominent posterior pharyngeal band of lymphoid tissue. A similar white membrane also covers the lymphoid tissue in the postnasal space.

The appearance on examination of the postnasal space may lead to a suspicion of neoplasm. The increase in the bulk of the adenoids also causes a “nasal voice”, which is sometimes characteristic of infectious mononucleosis.



FAUCIAL DIPHTHERIA

Causes membranous tonsillitis. Membranous exudate are seen over tonsils and soft palate, followed by its distant toxic effects. It is caused by corynebacterium diphtheria which are gram positive bacilli with its 3 strains mitis, gravis, intermedius. These organisms grow in Loeffler's media or Tellurite agar. These organisms ferment glucose. This infection is rare these days because of the success of universal immunisation programme. Exotoxin can be produced that is both neurotoxic and cardiotoxic.

PATHOGENESIS:

Multiplication of organism leads to production of toxins which cause epithelial necrosis with collection of polymorphs and fibrin leading formation of false membranous formation (because it consists of necrotic layer of mucosa, where as true membrane is superimposed over the intact mucosa).

FAUCIAL DIPHTHERIA

CLINICAL FEATURES: the onset may be more gradual with less pronounced systemic complaints.

1. The child is very quiet
2. Lassitude
3. Malaise
4. Head ache
5. Fever:-Patient runs a mild fever. Tachycardia, Toxaemia are predominant features.
6. Foetor

Adenopathy may be less and hoarseness, stridor and croupy coughing frequently occur.

EXAMINATION

Forms a tough grayish/yellowish membrane on one or both tonsils, not easily removed since gets adherent Also described as . firm, leathery gray membrane is adherent to the tonsils and is pathognomonic Attempts to remove leads to bleeding. Membrane is usually Unilateral and it extends beyond the confines of Tonsils involving ant & post pillar, soft palate, uvula. If bilateral demonstration of continuity of membrane from one tonsil to other either along the posterior pharyngeal wall or along the soft palate is a must.

Massive cervical adenitis is also seen i.e. Bull neck.

FAUCIAL DIPHTHERIA

DIAGNOSIS is by :

Signs and symptoms

Throat swab for culture and sensitivity

Finding Klebs- Loffler bacillus confirms the diagnosis

Lymphocyte count is raised

Albuminuria is seen.

Schick test is positive

TREATMENT

Antitoxin and high dose PCN should be given in the first 48 hours.

Antitoxin depending on the severity of the disease, and combined with a full course of penicillin or erythromycin.

Local- 4000 IU AST IV route. , but part can be given IV/IM to 1- 2 lac depending on involvement of tonsil, both tonsils, pharynx and larynx.

People immunized may be carriers and should be treated with antibiotics. Antitoxin may cause severe allergic reactions

ACUTE STEPTOCOCCAL
TONSILLITIS

1. OCCURS IN INDIVIDUALS BETWEEN 6 -20 YRS
2. H/O ATTACKS OF RECURRENT TONSILLITIS
3. PAIN IS SEVERE
4. TOXEMIA ABSENT
5. DIRTY WHITE PSEUDO MEMBRANE LIMITED TO TONSIL ONLY AND CAN BE REMOVED WITH NO RAW AREAS AFTER REMOVAL
JDLN-SLIGHTLY ENLARGED
6. THROAT SWAB SHOWS STREPTOCOCCI
7. SCHICK TEST NEGATIVE

ACUTE DIPHTHERIA

- OCCURS IN INDIVIDUALS UNDER 10 YEARS OF AGE
- H/O EXPOSURE TO DIPHTHERIA
- PAIN IS MILD
- TOXEMIA PRESENT
- MEMBRANE EXTENSIVE ON TONSIL, UVULA, AND SOFT PALATE. CAN ONLY BE REMOVED WITH DIFFICULTY, UNDERLYING RAW AREA IS SEEN ON REM
- MASSIVELY ENLARGED OVAL.
- SWAB SHOWS C. DIPHTHERIA
- METHELENE BLUE STAINING IS DONE TO DEMONSTRATE METACHROMATIC GRANULES WITH CHINESE LETTER ARRANGEMENT OF ORGANISM.
- SCHICK TEST POSITIVE

VINCENT'S ANGINA

Vincent's angina is caused by simultaneous infection with Fusiform bacilli and spirochaetes cribriform bacilli(Gram negative).

French mouth in past due to fowl fishy odour. Poor hygiene contributes to this condition.

Patient has multiple slough covered ulcers over the Tonsils, Anterior pillars and Gums. A gray necrotic pseudo membrane forms over the tonsils. Membrane can be easily removed revealing an irregular ulcer on tonsil.

Treatment: with high dose PCN/Oral Penicillin and Mouth washes.

Treatment is

ORAL CANDIDIASIS (THRUSH)

Monilla, or oral candidiasis (thrush), is one of the fungal infections of the pharynx and one of the most common upper respiratory tract manifestation of AIDS. Also seen in neonates and may complicate treatment with broad spectrum antibiotics.

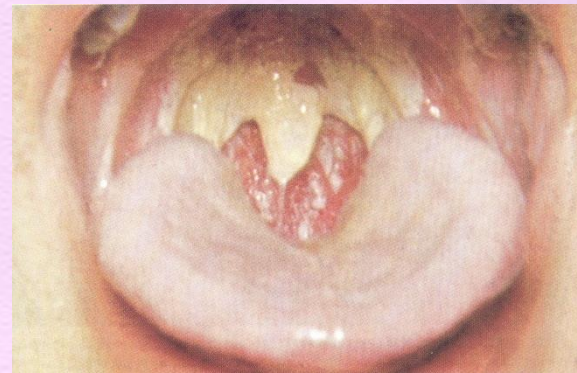
Extensive white areas (either continuous or punctate) covering the entire oropharynx and not limited to the tonsil. Swab shows candida albicans.



ORAL CANDIDIASIS (THRUSH)

The condition respond to antifungal mouth washes or lozenges containing nystatin, ketoconazole, fluconazole or amphotericin. It is commoner in neonates, and may complicate treatment with broad spectrum antibiotics.

Oral candidiasis is one of the commonest URT manifestations of AIDS; unexplained oral fungal infection should make the possibility of AIDS a diagnostic consideration. Nasal vestibulitis and cervical lymphadenopathy may be associated findings. If there is dysphagia with oral candidiasis, esophageal involvement should be suspected.



AGRANULOCYTOSIS

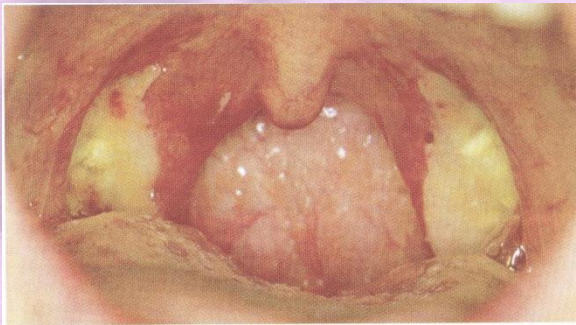
Presents with ulcerative necrotic lesions not only on tonsils but elsewhere in oropharynx.

Pt. is severely toxic. TLC is low and polymorphs neutrophils may be reduced to 5% or less.

Any time patient has Toxaemia associated with ulcerative lesion check for TLC and Blood smear.

POST TONSILLECTOMY SLOUGH

The tonsillar fossae following tonsillectomy are covered with a white/ yellow membrane for about 10 days until the fossae are epithelialized.



ULCERS

APTHOUS ULCERS

Involve any part of oral cavity and oropharynx. It may be solitary and involve tonsil and pillars. It is very painful.



ULCERS

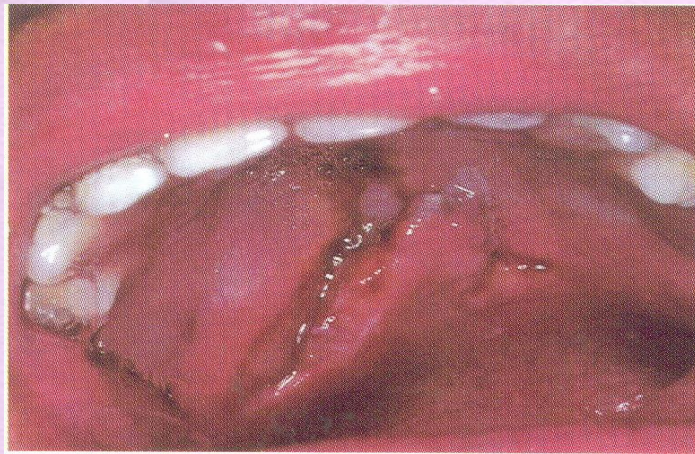
TRAUMATIC ULCER

Any injury to oropharynx heals by formation of a membrane.

Trauma to the tonsil area may occur accidentally when hit with a tooth brush, a pencil held in mouth or finger in the throat .

Membrane appears within 24 hours.

PALATAL TRAUMA: Laceration to the hard and soft palate are not uncommon. The often given advice to children not to “run with a pencil or similar object in their mouth” is intended to offset palatal laceration resulting from a fall. Suturing, however, is usually unnecessary, and unless there is gross mucosal separation, the palate and tongue heal well spontaneously following trauma.



LEUKAEMIA

Ulcerating lesion is seen on tonsils.

Marked anaemia and may be progressive.

Peripheral blood shows TLC $> 100,000/\text{cumm}$. It may be normal. TLC may be reduced, sometimes below 1000 . Large no. of immature white cells on smear examination. Blasts cells are seen on examination of the bone marrow.

In children, 75% of leukaemias are acute lymphoblastic and 25% acute myelogenous or chronic, while in adults 20% of acute leukaemias are lymphocytic and 80% non-lymphocytic.

ULCERS ON THE TONSILS & SOFT PALATE

Candida was cultured, but these are snail-track ulcers of secondary syphilis.



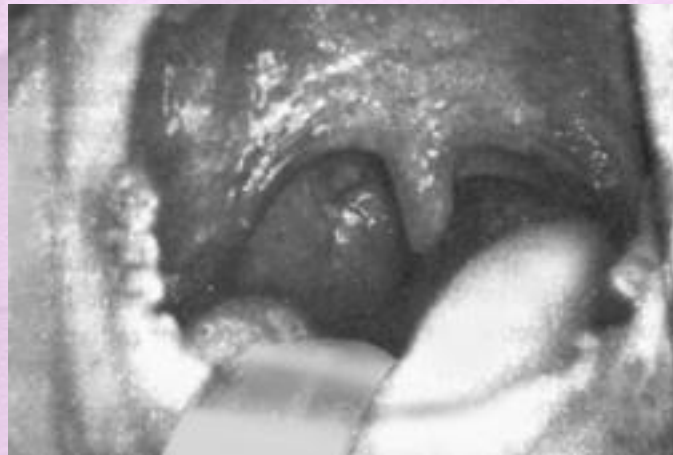
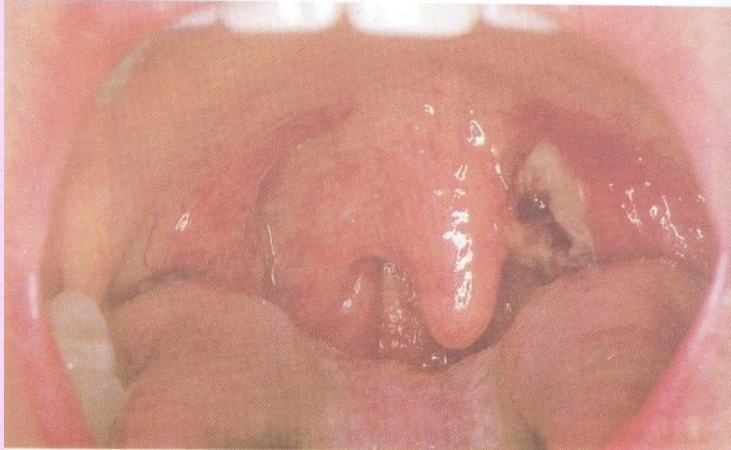
MALIGNANCY TONSILS

CARCINOMA TONSIL & TONSILLAR

FOSSA: SCC is the most common and presents as an ulcerated lesion with necrotic base. Lymphomas may present as unilateral tonsillar enlargement with or without ulceration and may simulate indolent peritonsillar abscess.

A PALATE & TONSIL CARCINOMA: This presents as an indurated ulcer rather than a diffuse enlargement, and causes referred ear pain. The biopsy is taken from the ulcer margin.

MALIGNANCY TONSILS



A Shower bar
Sweet and

KERATOSIS PHARYNGEAUS

Yellow spicules due to hyperkeratinized areas of epithelium are sometimes extensive over the tonsil and lingual tonsil. It is important in diagnosis to probe the tonsil to be certain that these yellow areas are not exudate. No treatment is required for this condition unless it is associated with tonsillitis.

TONSILLAR EXUDATE: from the cyst may appear indistinguishable from keratosis.

TONSILLOLITHS are yellow gritty particles in crypts, more commonly seen in adults with a h/o recurrent tonsillitis.

