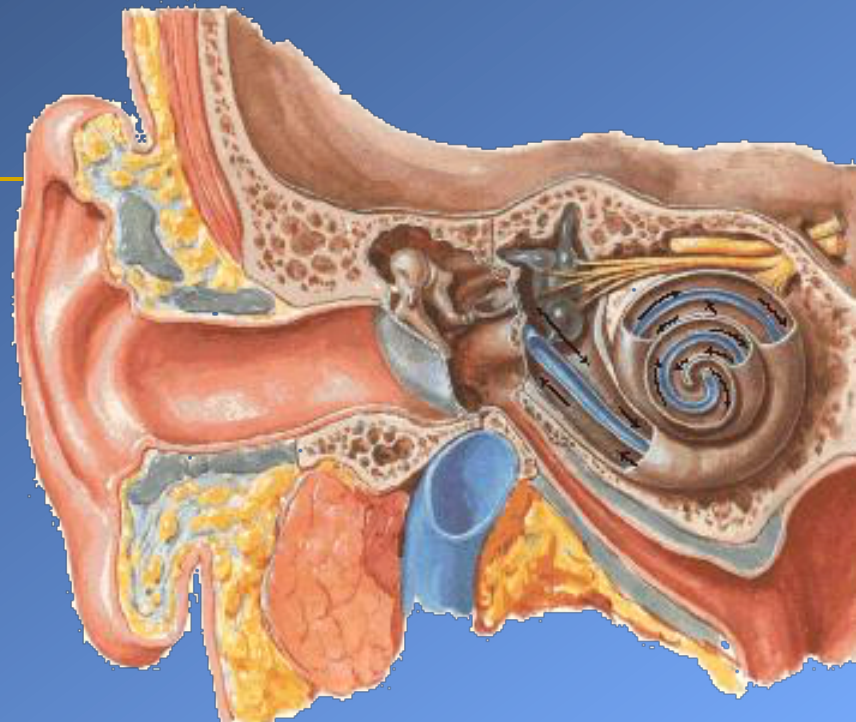


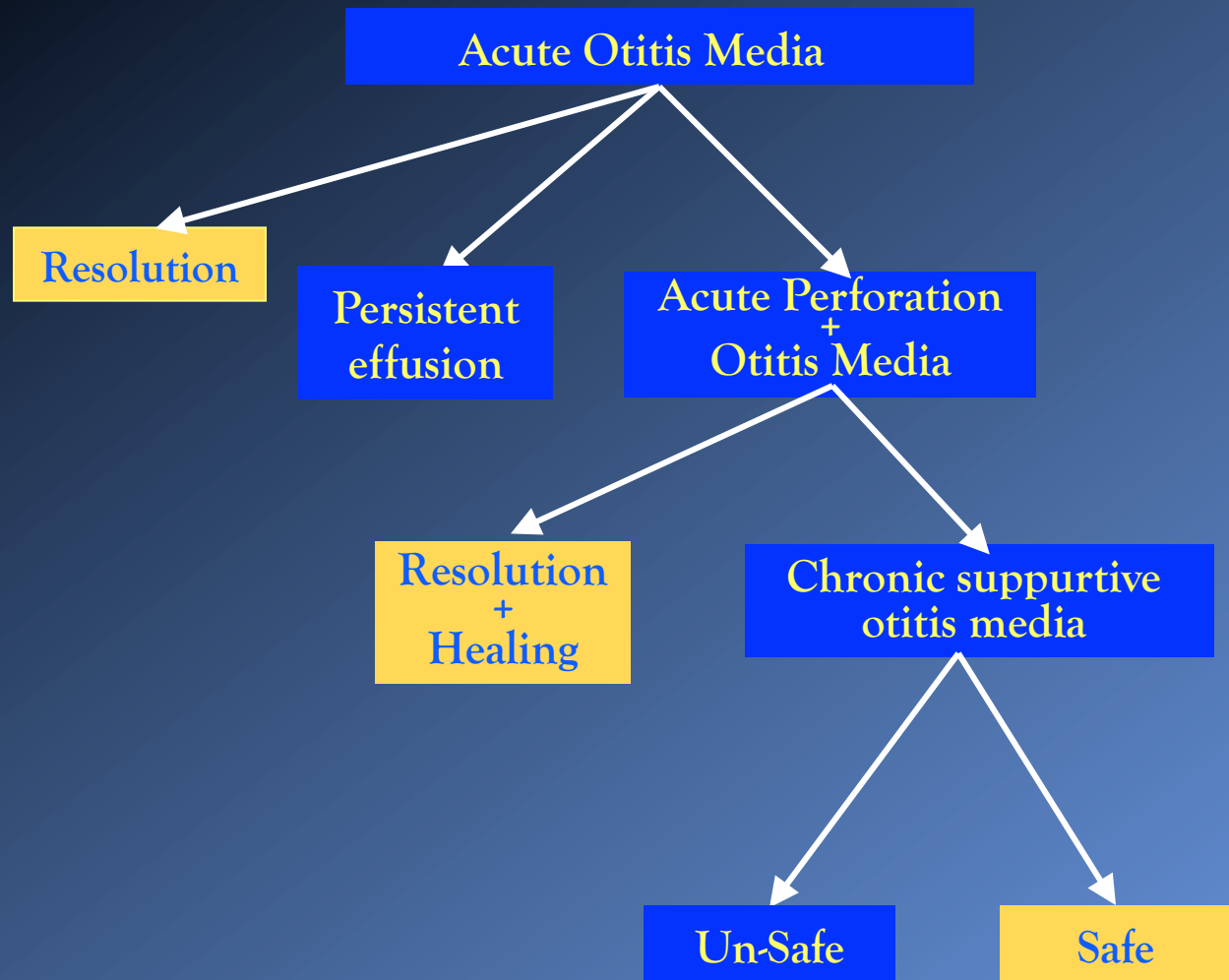
# Chronic Otitis Media and Complications of Otitis Media

*ALHABIB Salman MD DES*

*Assistant Professor*

*Otology, Neurotology and  
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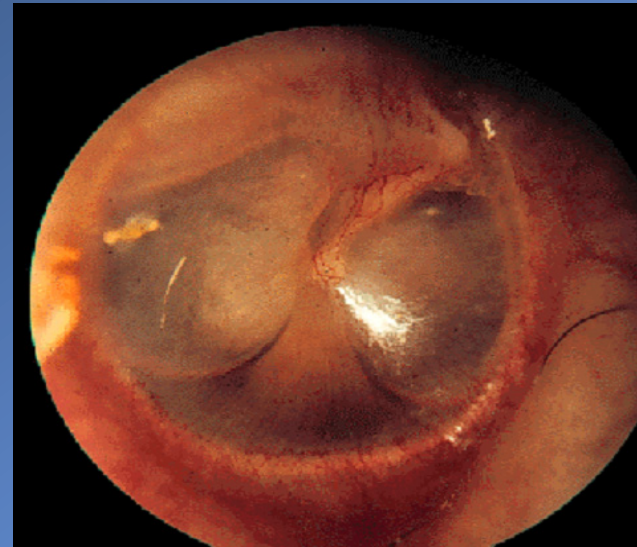


# Classification of Chronic Otitis Media

- Chronic Non Suppurative Otitis Media
    - Otitis media with effusion “OME”
    - Adhesive otitis media
  - Chronic Suppurative Otitis Media “CSOM”
    - Tubo-tympanic (Safe)
    - Attico-antral (Unsafe)
-

# Chronic Middle Ear Effusion

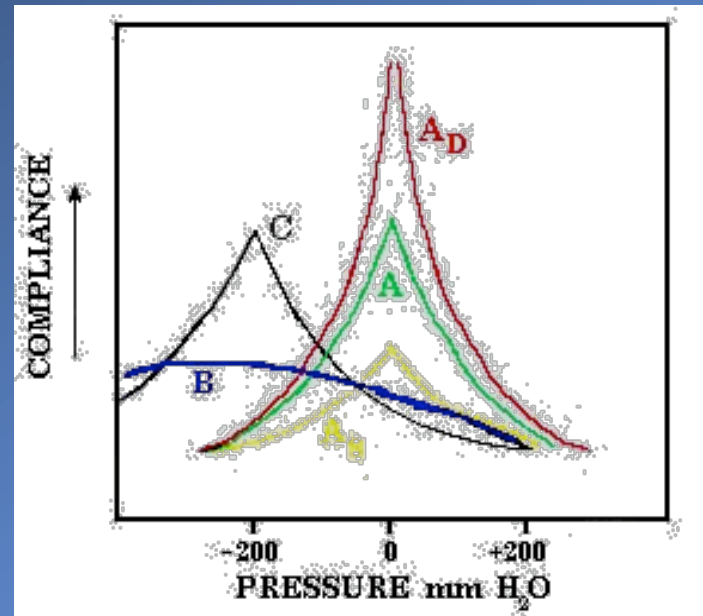
- Middle ear effusion (MEE)
- Previously thought sterile
- 30-50% grow in culture





# Diagnosis

- Otoscopy
- Microscope
- Audiogram
  - CHL
  - SNHL
- Tympanogram (type B)



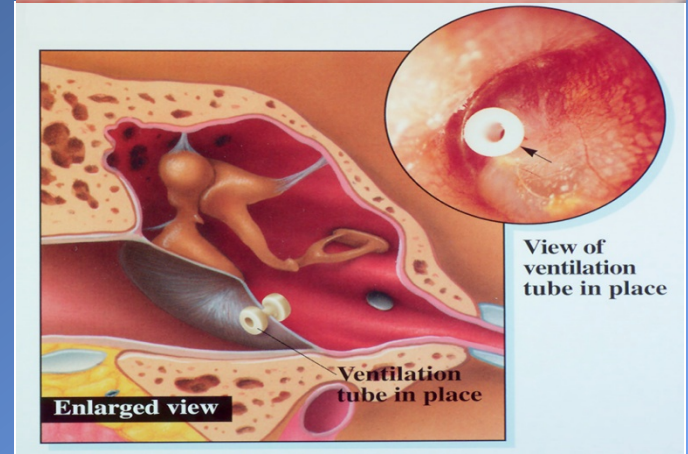
# Chronic MEE

- Estimates of residual Effusion:
  - 70% @ 2 wks
  - 40% @ 4 wks
  - 20% @ 8 wks
  - 10% @ 12 wks



# Otitis Media with Effusion (Chronic non-suppurative Otitis Media)

- ❖ Surgical treatment : Tympanostomy Tubes insertion :
  - ❑ Bypass Eustachian tube to ventilate middle ear.
  - ❑ Indication :
    - Chronic OME >3 months with hearing loss
    - Speech delay
    - SNHL
    - Retraction Pocket TM



# Adhesive Otitis Media (Chronic non-suppurative Otitis Media)

- The result of long standing Eustachian tube dysfunction.
- The drum loses structural integrity and becomes flaccid.
- Contact between the drum and the incus or stapes can cause bone erosion at the IS joint.



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# Chronic Suppurative Otitis Media with and without Cholesteatoma

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# CSOM: Definition

- 3D Duration, Discharge and Deafness
  - Duration > 3 weeks despite treatment
  - Discharge Purulent Otorrhea
  - Deafness: Perforation
-

# Chronic Suppurative Otitis Media

## Etiology :

- *Pseudomonas aeruginosa*.
  - *Staphylococcus aureus*.
  - *Proteus* species.
-

# Chronic Suppurative Otitis Media

**Classification :**

**Chronic suppurative otitis media**



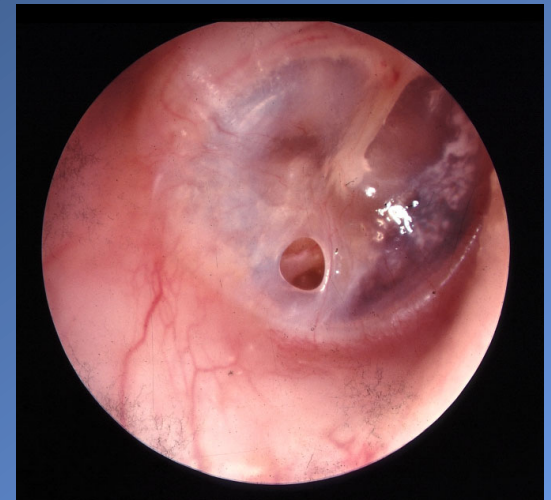
**Tubo-tympanic type (safe)**

**Attico-antral (un-safe)**

# Chronic Suppurative Otitis Media

## A- Tubotympanic type (Safe) :

- ❑ Simple perforation.
- ❑ Intermittent non offensive non bloody ear discharge.
- ❑ On examination (central perforation, peripheral/ non-marginal).



# Chronic Suppurative Otitis Media

**Chronic Suppurative Otitis Media without  
cholesteatoma ( safe )**

A-Otological antibiotics. (*ofloxacin*)

B-Surgical repair of the TM perforation.

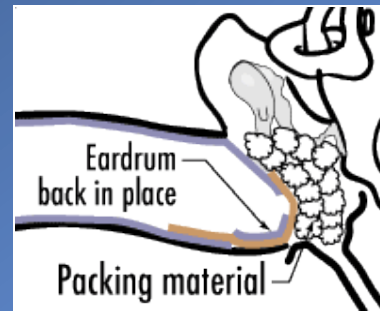
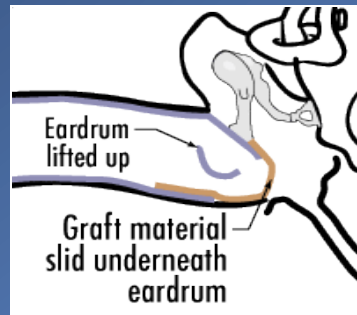
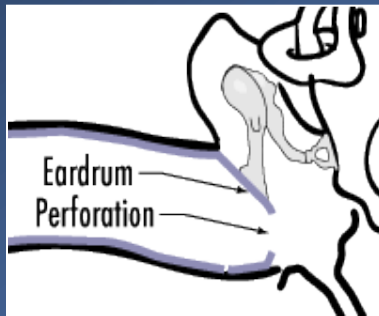
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# Chronic Suppurative Otitis Media

## B-Surgical repair of the TM perforation :

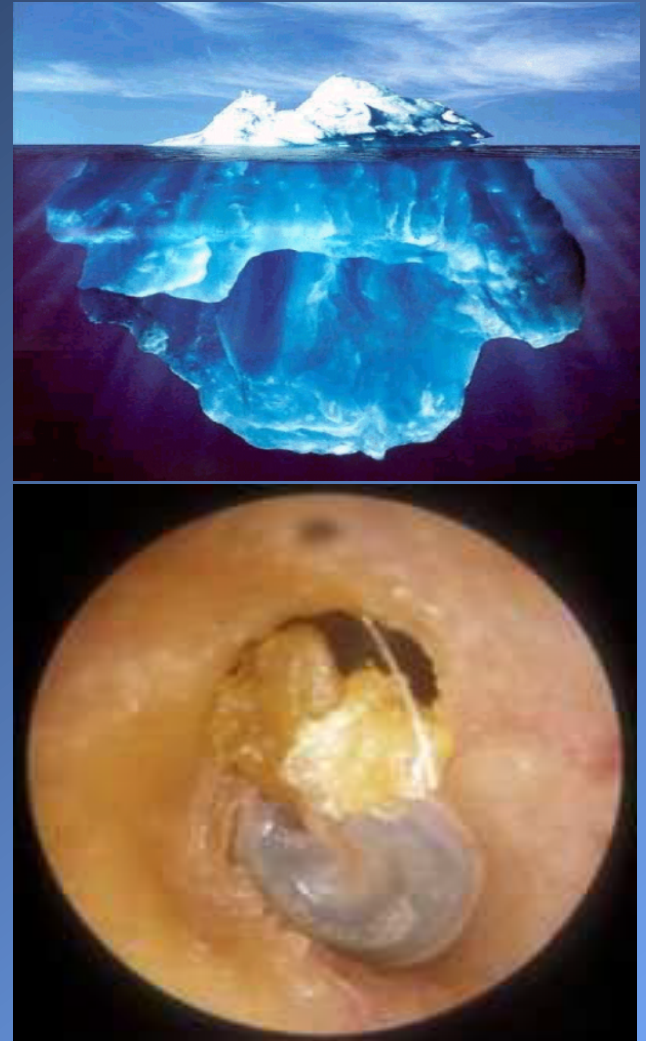
- Tympanoplasty



# Chronic Suppurative Otitis Media

## B- Attico-antral (unsafe-Cholesteatoma) :

- **Cholesteatomas**: are epidermal inclusion cysts of the middle ear and/or mastoid with a squamous epithelial lining.
- Skin growing in the wrong place
  - Middle ear cleft
  - Petrous apex
- Chronic ,Scanty, offensive and bloody ear discharge.
- On examination marginal perforation.

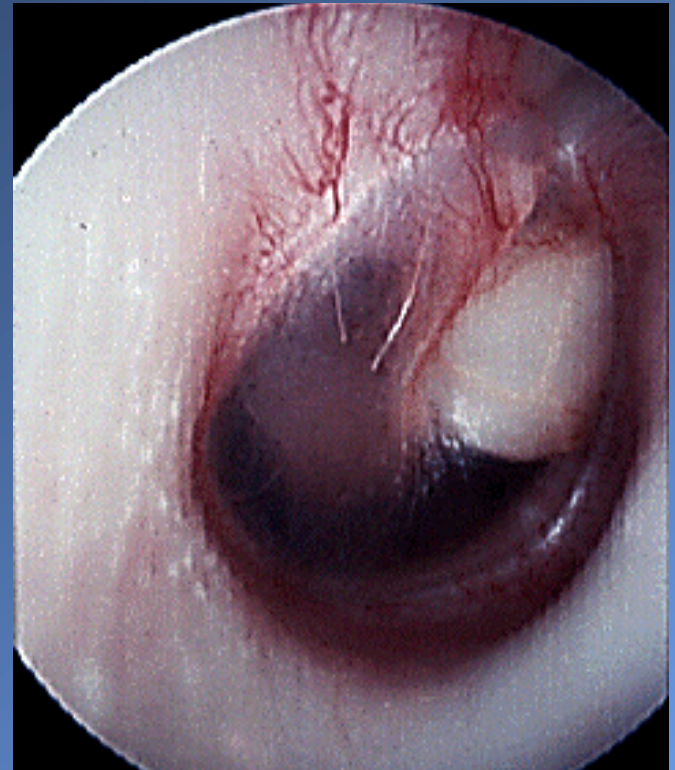


# Cholesteatoma Classification

- Congenital
  - Acquired
    - Primary
    - Secondary
-

# Congenital Cholesteatoma

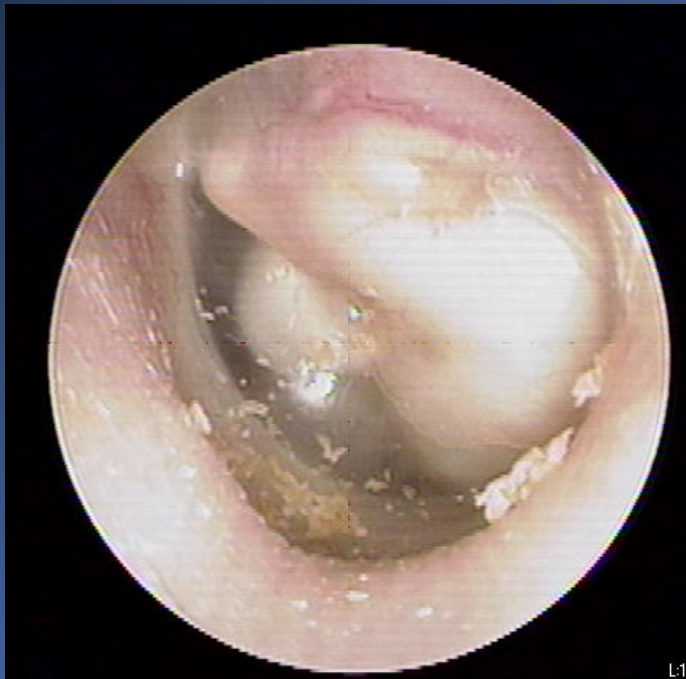
- **Definition (Levenson, 1989):**
  - White mass medial to normal tympanic membrane
  - Normal pars flaccida and pars tensa
  - No prior history of otorrhea or perforations
  - No prior otologic procedures





# Congenital Cholesteatoma

## Large congenital cholesteatoma



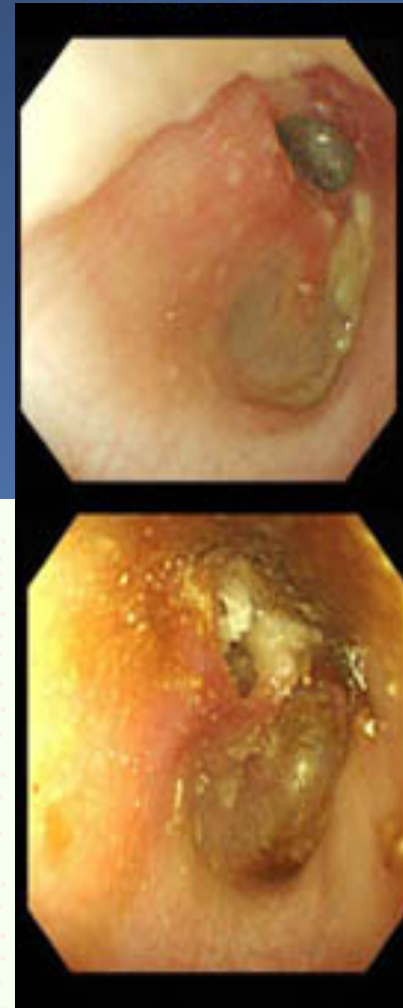
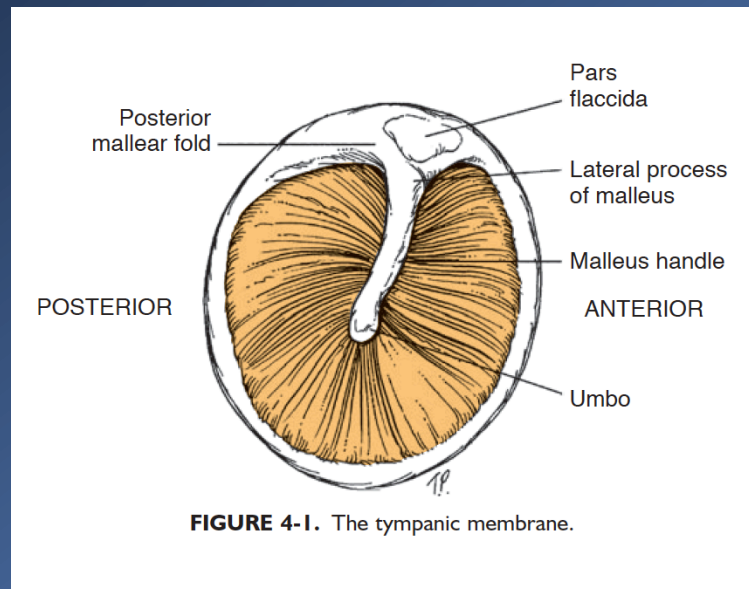
ossicular erosion

cholesteatoma



# ■ Primary Acquired Cholesteatoma :

- Pocket Invagination
- Otitis media with effusion



## ■ Secondary Acquired Cholesteatomas:

### □ **Implantation theory**

Squamous epithelium implanted in the middle ear as a result of surgery, foreign body, blast injury, etc.

### □ **Metaplasia theory**

Middle ear epithelium is transformed to keratinized stratified squamous epithelium secondary to chronic or recurrent otitis media

### □ **Epithelial invasion theory**

Squamous epithelium migrates along perforation edge medially.

# Cholesteatoma

## ◆ History

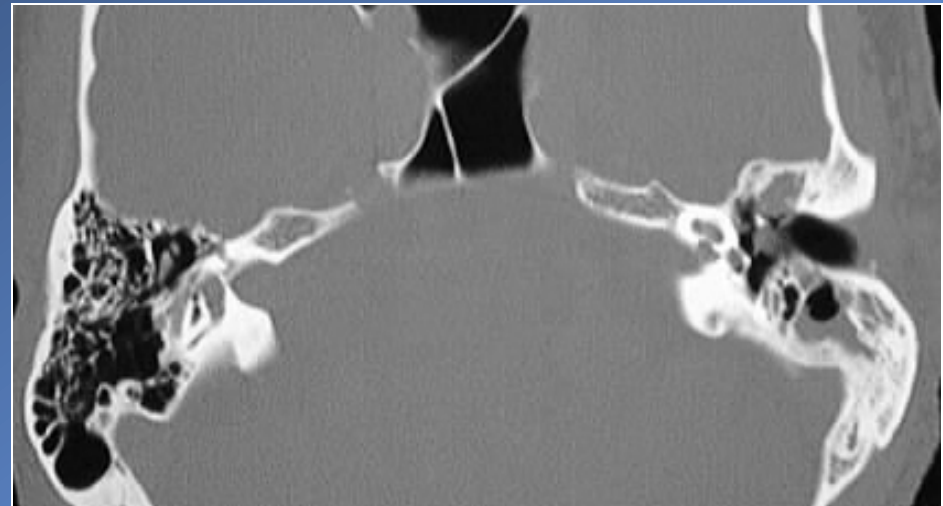
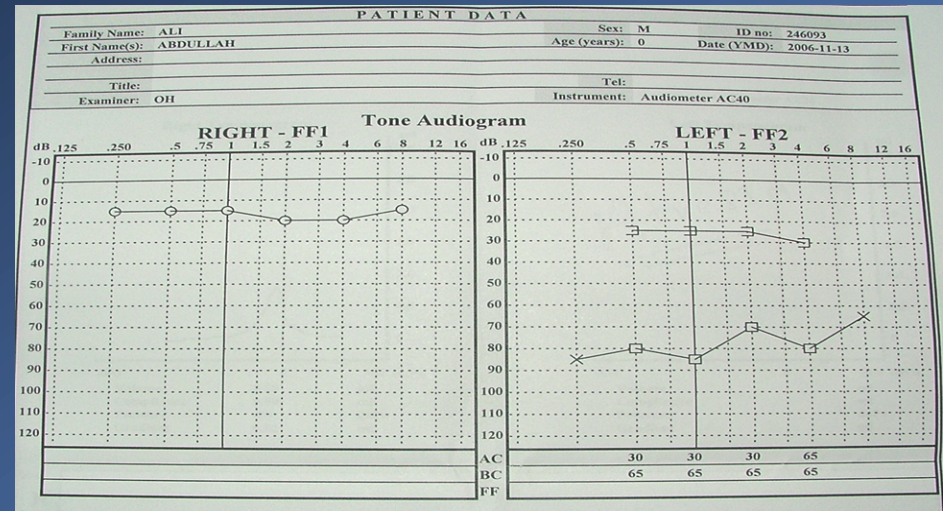
- Hearing loss
- Otorrhea
- Tinnitus
- Vertigo

## ◆ Examination

- Otoscopy
- Microscopy
- Tuning fork test

## ◆ Investigation

- Audiological assessment
- Radiological assessment



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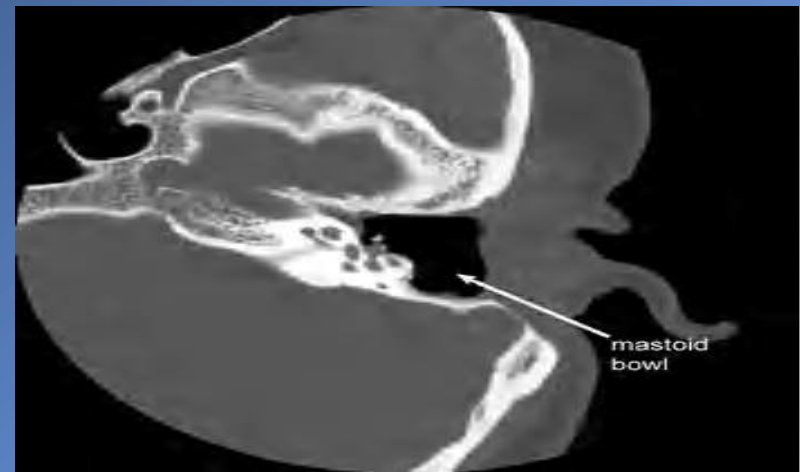
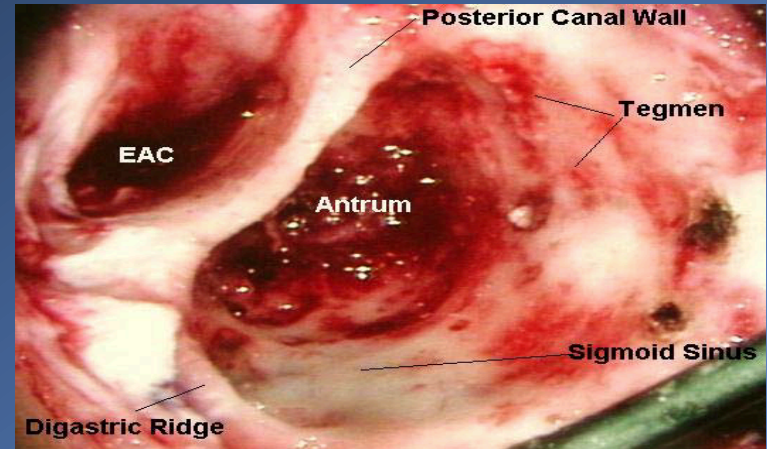
# Treatment

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# Treatment Cholesteatoma (un safe)= Surgery

- Canal wall up (CWU)
  - Complete mastoidectomy
- Canal wall down (CWD)
  - Modified radical mastoidectomy
  - Radical mastoidectomy





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# Complications Of Chronic Otitis Media

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# The complications of Acute and Chronic Otitis Media

## Predisposing factors :

- ❑ Diabetes,
- ❑ Leukemia,
- ❑ Immunodeficiencies,
- ❑ Malnutrition,
- ❑ Medications such as steroids that suppress the immune system
- ❑ Temporal bone fractures,
- ❑ Congenital dehiscence,
- ❑ Chronic infection may remove anatomic barriers to infection

# COMPLICATIONS OF ACUTE AND CHRONIC OTITIS MEDIA

## ■ Extracranial

- Acute mastoiditis
- Chronic mastoiditis
- Postauricular abscess
- Bezold abscess
- Temporal abscess
- Petrous apicitis
- Labyrinthine fistula
- Facial nerve paralysis
- Acute suppurative labyrinthitis

## ■ Intracranial

- Meningitis
- Brain abscess
- Subdural empyema
- Epidural abscess
- Lateral sinus thrombosis
- Otitic hydrocephalus
- Encephalocele and cerebrospinal fluid leakage

# Intra-Temporal Complications

- Labyrinthine fistula
  - Facial nerve paralysis
  - Mastoiditis /mastoid abscess
  - Labyrinthitis
  - Ossicular fixation or erosions
-

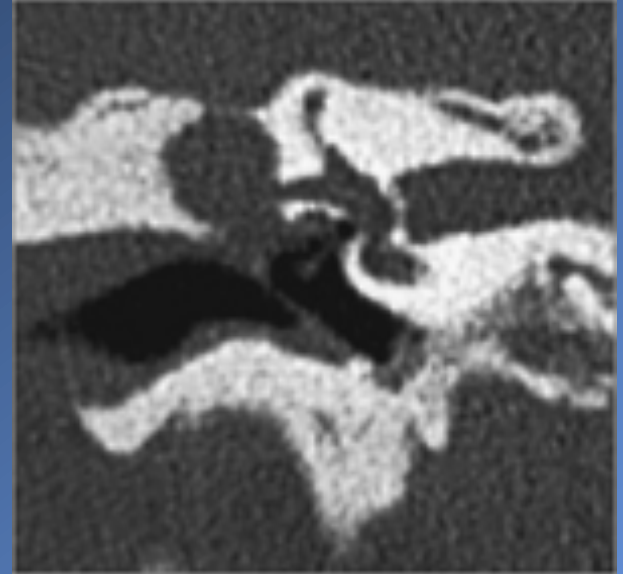
# Labyrinthine Fistula

## Definition :

- communication between middle and inner ear

## Atiology :

- It is caused by erosion of bone by cholesteatoma.



# Labyrinthine Fistula

## Clinical picture :

- Hearing loss.
- Attack of instability mostly during straining ,sneezing and lifting heavy object.
- Positive fistula test.

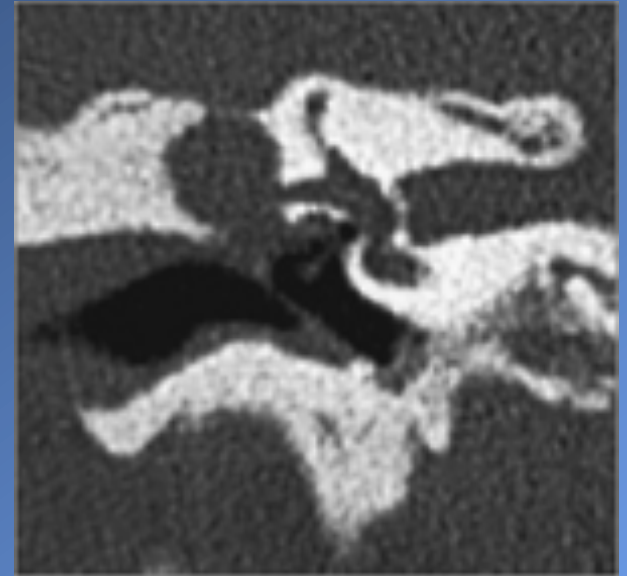
# Labyrinthine Fistula

## Diagnosis:

- CT scan of temporal bone

## Treatment :

Mastoidectomy  
+ Tympanoplasty





# Facial Nerve Paralysis

- Result of the inflammation within the fallopian canal to acute or chronic Otitis media.
- **Tympanic segment** is the most common site to be involved.



# Facial Nerve Paralysis

## Diagnosis :

- ❑ Clinically
- ❑ CT scan Mastoid.



# Facial Nerve Paralysis

## Treatment :

- Antibiotics and steroids
- Acute otitis media and acute mastoiditis :  
(cortical mastoidectomy + ventilation tube).
- Chronic otitis media with cholesteatoma:  
(mastoidectomy ± facial nerve decompression )

# Mastoiditis

## Definition :

It is the inflammation of mucosal lining of antrum and mastoid air cells system.





# Mastoiditis

## Symptoms:

- Earache
- High Fever
- Ear discharge

## ■ Signs:

- Auricular Protrusion
- Mastoid tenderness
- Swelling overmastoid
- Hearing loss





# Mastoiditis

## Investigation :

- CT scan temporal bones.
- Ear swab for culture and sensitivity.



# Mastoiditis

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## Medical treatment:

- Hospitalize
- Antibiotics
- Analgesics

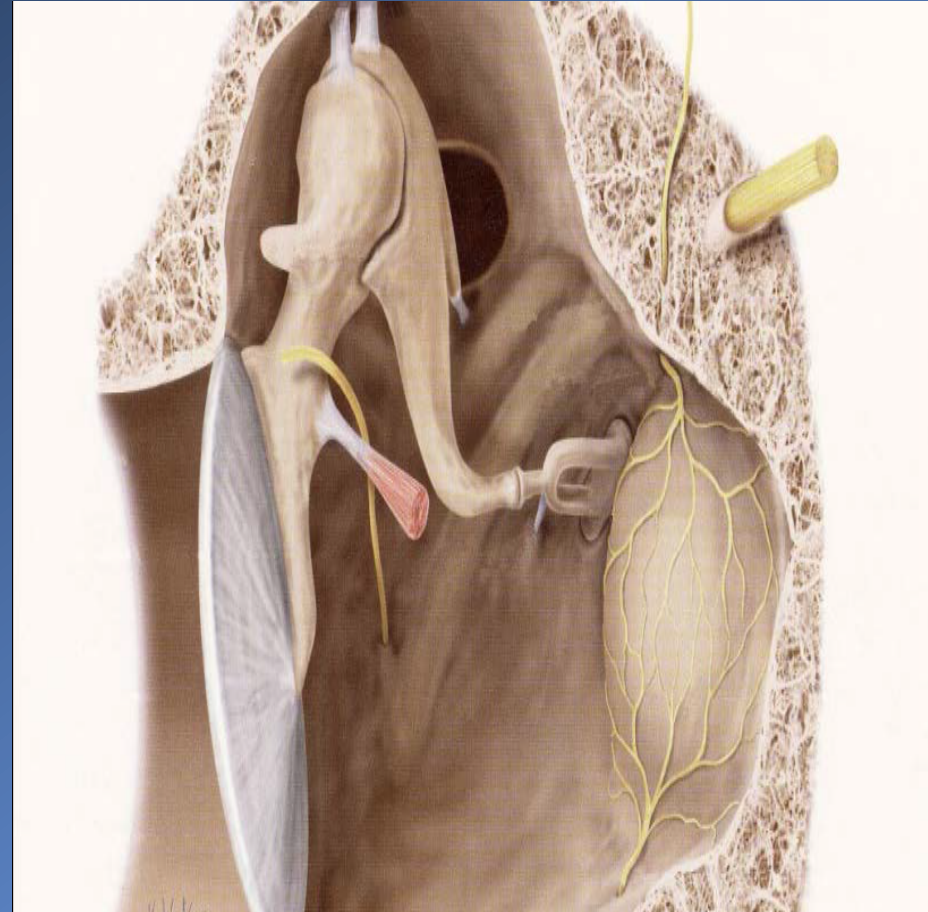
## Surgical treatment:

- Myringotomy
  - Cortical mastoidectomy
-

# Intra-Cranial Complications

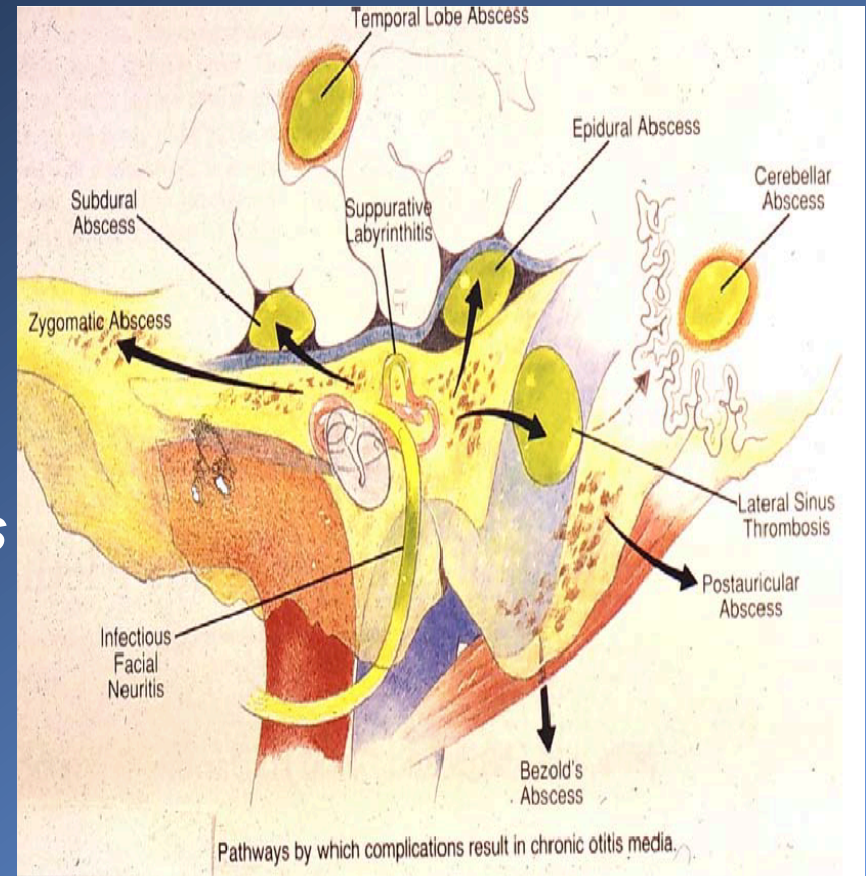
**What are the natural barriers between brain and temporal bone ?**

- Bone .
- Meninges .



# Intra-Cranial Complications

- ***Meningitis***
- ***Extradural Abscess***
- ***Subdural Abscess***
- ***Venous Sinus Thrombosis***
- ***Brain Abscess***



# Meningitis

## Definition :

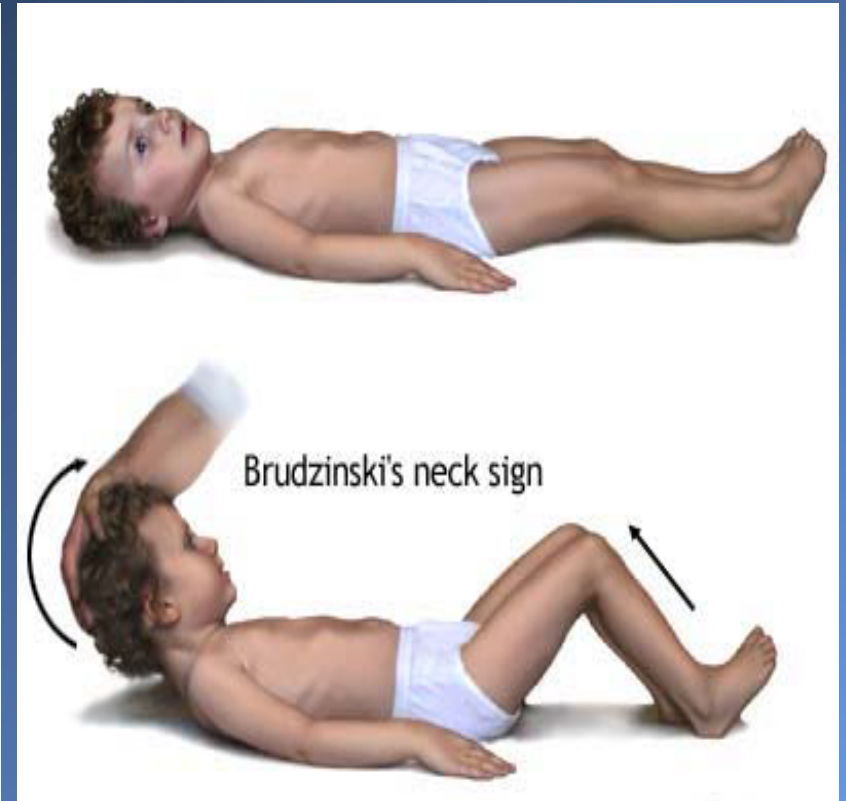
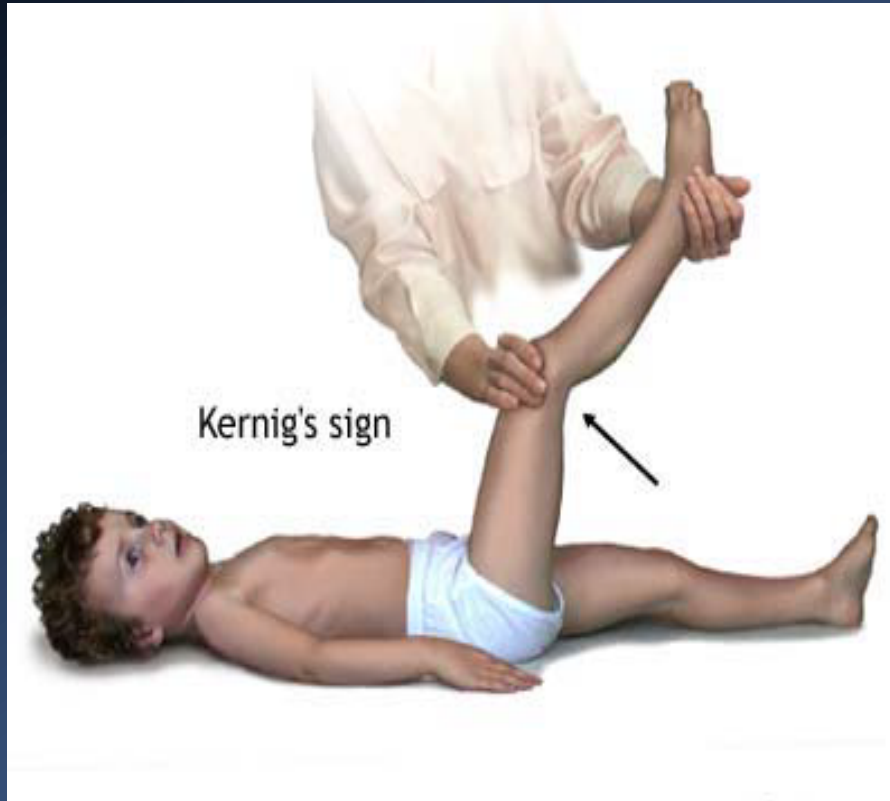
- Inflammation of meninges surrounding the brain and spinal cord.

## Clinical picture:

- **General symptoms and signs:**
  - high fever, irritability,
  - photophobia, and delirium.



# Signs of Meningeal Irritation:



**Kernig & Brudzinski** signs have low sensitivity but high specificity

# Meningitis

## Diagnosis :

- Lumbar puncture is diagnostic.

## Treatment:

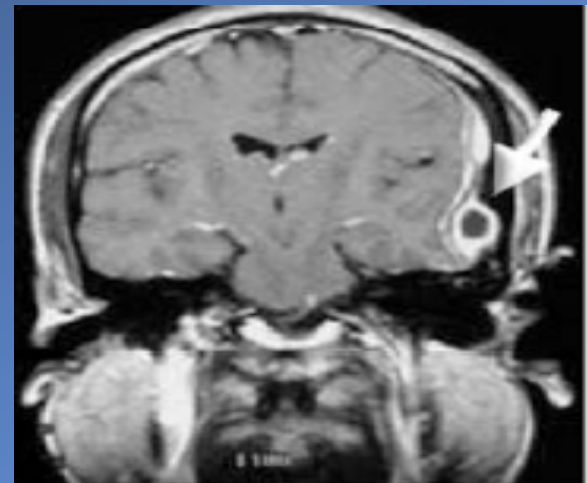
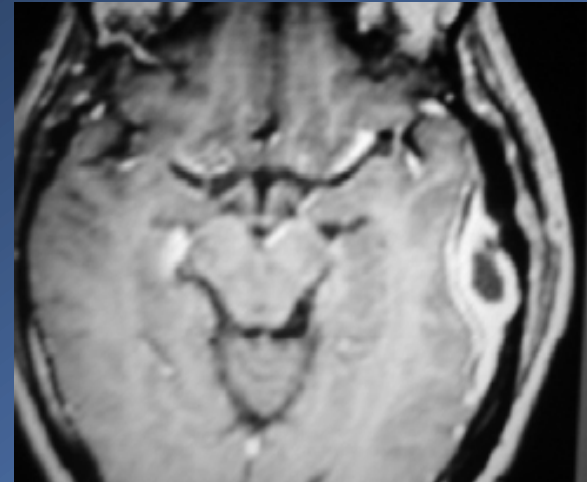
Treatment of the complication itself and control of ear infection:

- Specific antibiotics.
- Antipyretics and supportive measures
- Mastoidectomy to control the ear infection.



# Extradural Abscess

- Epidural abscesses are collections of pus external to the dura.
- Middle or posterior cranial fossa.



# Extradural Abscess

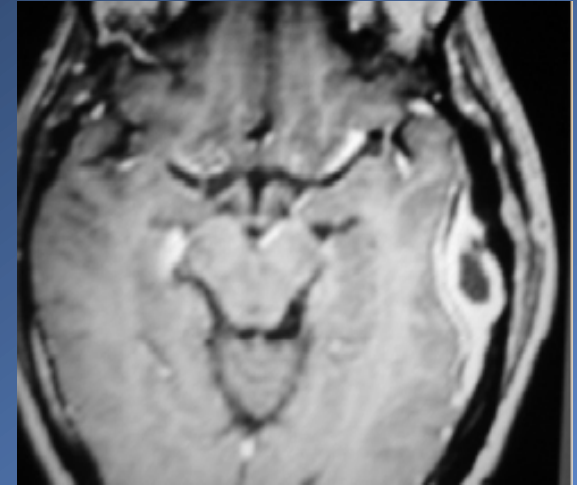
## Clinical Picture :

- ❑ Persistent headache on the side of otitis media.
- ❑ Pulsating discharge.
- ❑ Fever
- ❑ Asymptomatic (discovered during surgery)

# Extradural Abscess

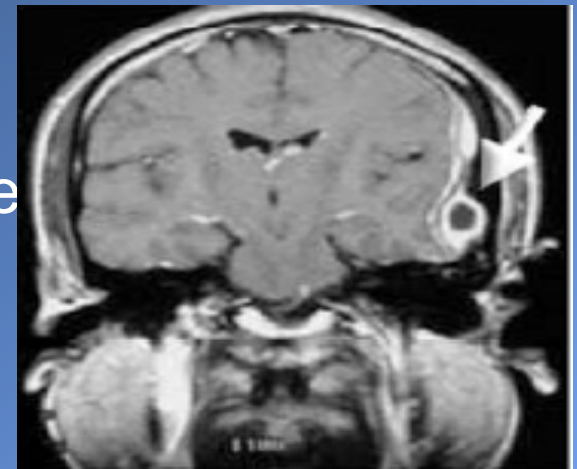
## Diagnosis:

- CT scans reveal the abscess as well as the middle ear pathology.



## Treatment:

- Antibiotics
- Mastoidectomy and drainage of the abscess.





# Subdural abscess

## Definition :

- ❑ Collection of pus between the dura and the arachnoid.
- ❑ It's a rare pathology

## Clinical picture :

- ❑ Headache without signs of meningeal irritation
- ❑ Convulsions
- ❑ Focal neurological deficit (paralysis, loss of sensation, visual field defects)

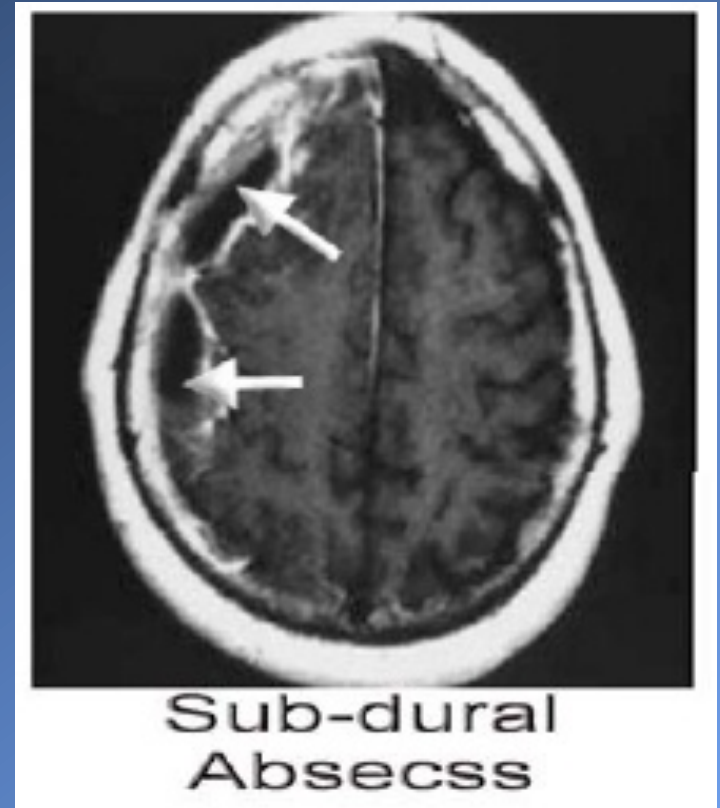
# Subdural abscess

## Investigations :

- CT scan, MRI

## Treatment:

- Drainage (neurosurgeons)
- Systemic antibiotics
- Mastoidectomy



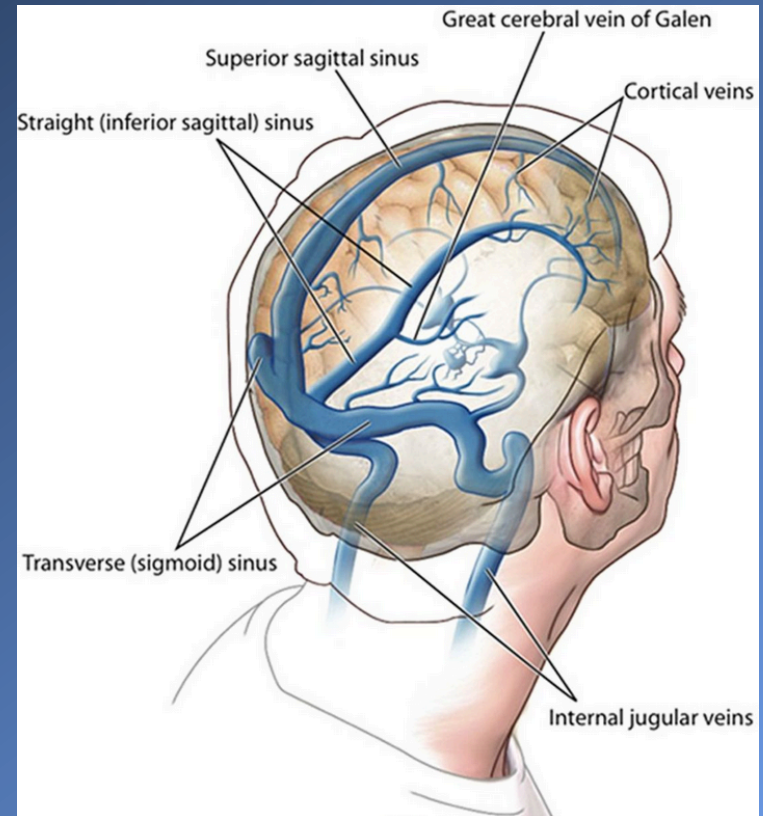
# Venous Sinus Thrombosis

## Definition :

- ❑ Thrombophlebitis of the venous sinus.

## Etiology:

- ❑ It usually develops secondary to direct extension.



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# Venous Sinus Thrombosis

## **Clinical picture:**

Headache, vomiting, and papilledema (increase intracranial pressure).

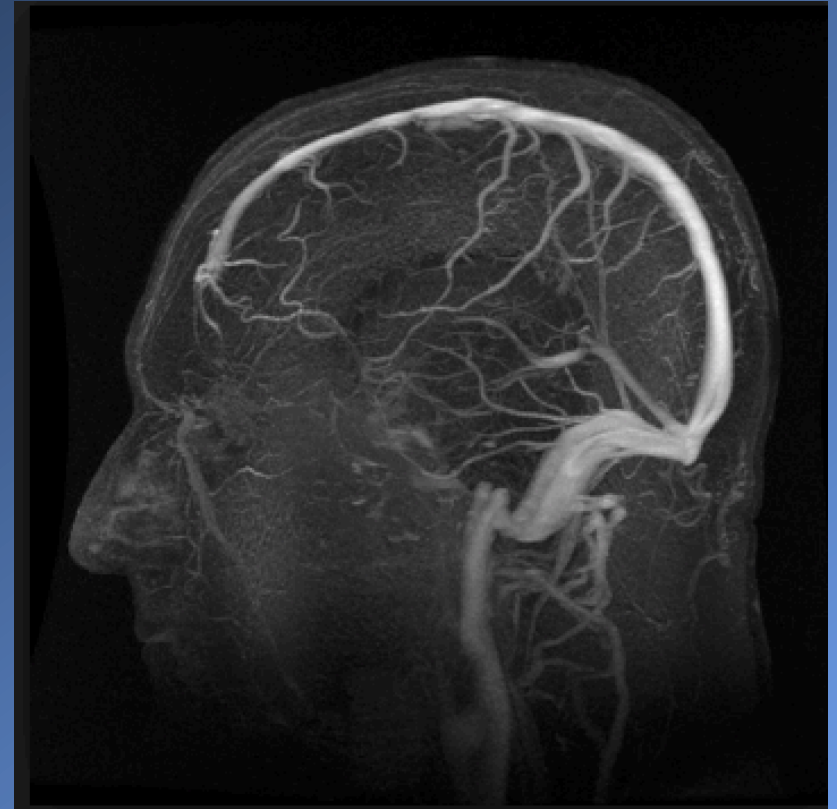
## **Signs of blood invasion:**

- (spiking) fever with rigors and chills .
  - persistent fever (septicemia).
-

# Venous Sinus Thrombosis

## Diagnosis

- ❑ CT scan with contrast.
- ❑ MRI, MRA, MRV
- ❑ Blood cultures is positive during the febrile phase.



MRV



# Venous Sinus Thrombosis

## Treatment :

### Medical:

- Antibiotics and supportive treatment.
- Anticoagulation.

### Surgical:

- Mastoidectomy with exposure of the affected sinus and the intra-sinus abscess is drained.

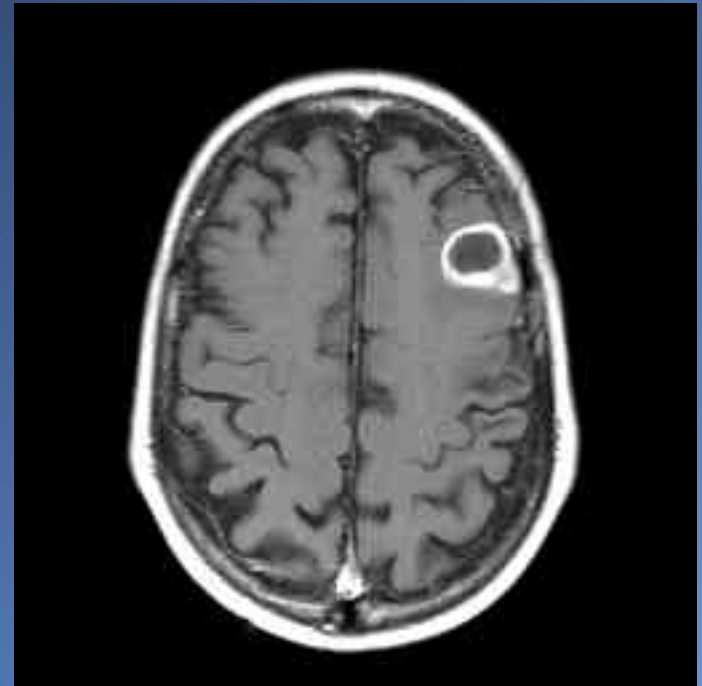
# Brain Abscess

## Definition :

- ❑ Localized suppuration in the brain substance.
- ❑ It is most lethal complication of Suppurative Otitis Media.

## Incidence:

- ❑ 50% is Otogenic brain abscess.



# Brain Abscess

## Pathology :

- Site: Temporal lobe or  
Less frequently, in the  
cerebellum.



Temporal Lobe

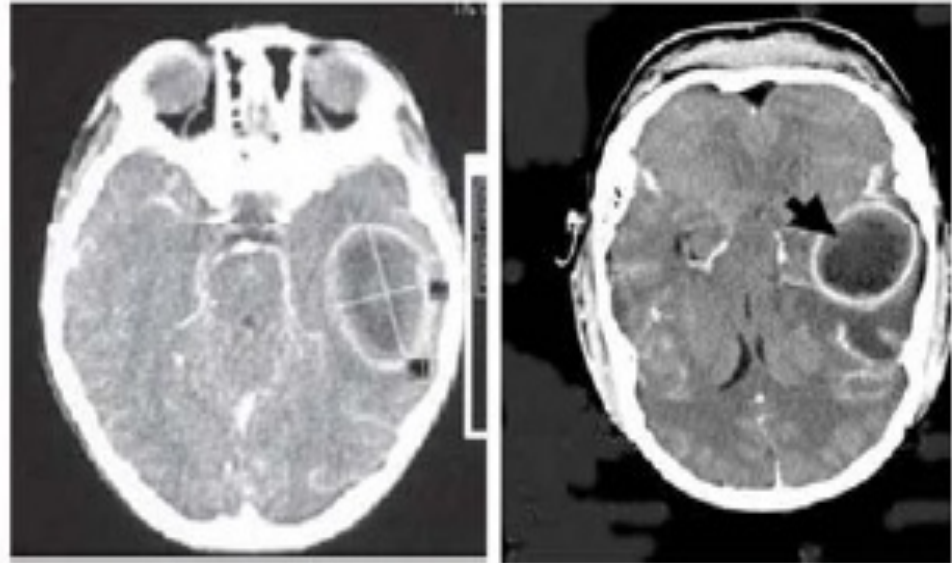


Cerebellum

# Brain Abscess

## Diagnosis :

- CT scans.
- MRI



Cerebral Abscess

# Brain Abscess

## Treatment :

### Medical:

- Systemic antibiotics.
- Measure to decrease intracranial pressure.

### Surgical:

- Neurosurgical drainage of the abscess .
- Mastoidectomy operation after subsidence of the acute stage.



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Thank you

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