



***OTITIS MEDIA WITH  
EFFUSION ----(OME)***

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24<sup>th</sup> Jan.2011***



# 一、overview

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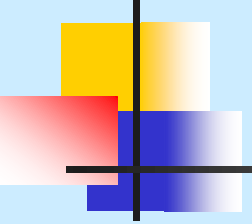
- **Otitis media with effusion (OME) is characterized by accumulation of fluid in the middle ear, conductive hearing loss , and is a kind of non-purulent diseases of middle ear.**

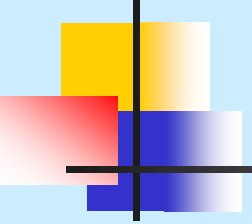


# EPIDEMIOLOGY

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- Peak incidence in the first two years of life (esp. 6-12 months)
- Boys more affected girls
- 50% of children 1 yr of age will have at least 1 episode.
- 1/3 of children will have 3 or more infections by age 3
- 90% of children will have at least one infection by age 6.
- Occurs more frequently in the winter months

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- **OME occurs as a result of decreased ventilation of the middle ear or mastoid air-cell system through the eustachian tube .**

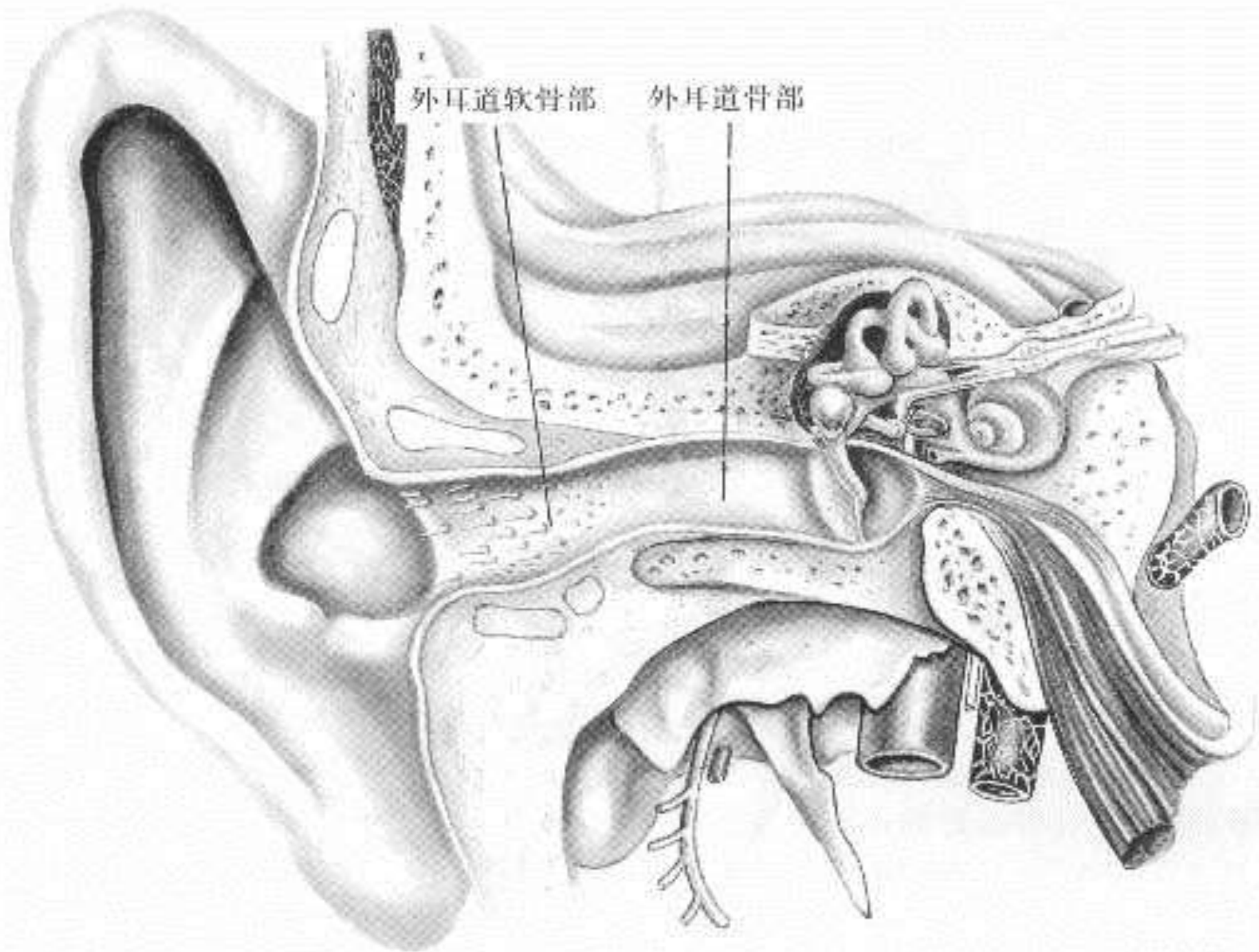
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- **OME is one of the most commonly resulting in deafness among children.**

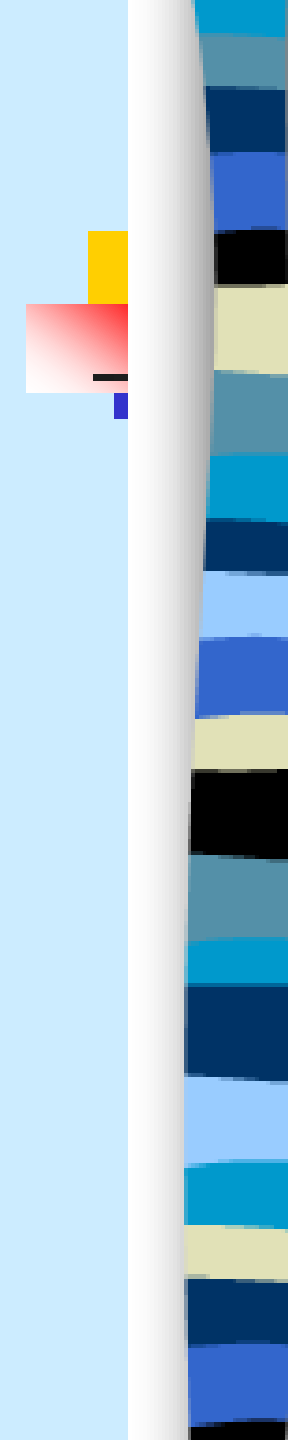
**OME occurs in adult too .**



## MICROBES AT FAULT!!!

- *Streptococcus pneumoniae*
- *Haemophilus influenzae*(non-typeable)
- *Moraxella catarrhalis*
- Group A *Streptococcus*
- *Staph aureus*
- *Pseudomonas aeruginosa*
- RSV assoc. with Acute Otitis Media





# RISK FACTORS

- Upper Respiratory Infections
- Allergies
- Craniofacial abnormalities (cleft palate)
- Down's Syndrome
- Passive smoking



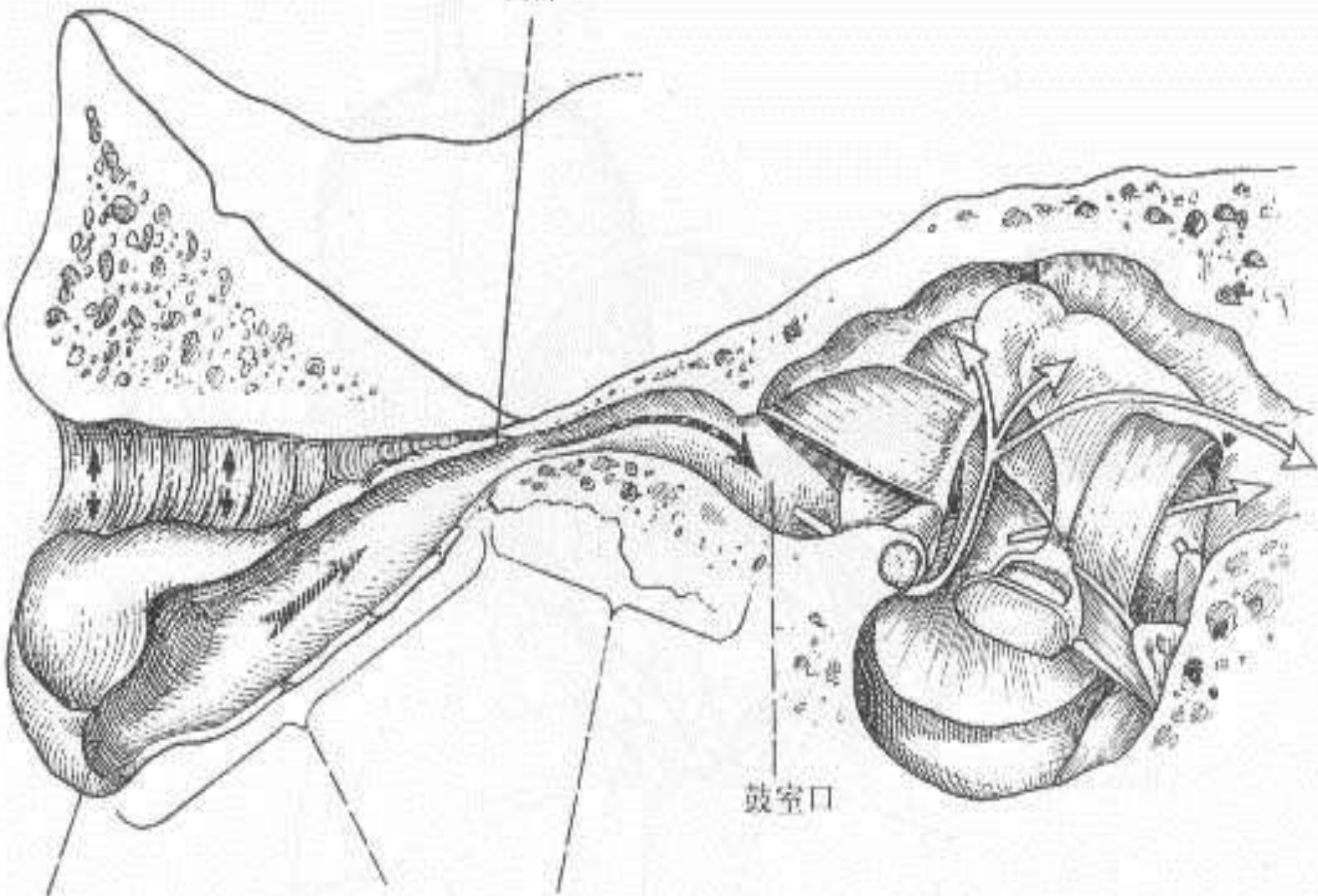


# Function of the eustachian tube

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- The eustachian tube is essential in maintaining a healthy, well-aerated the middle ear.

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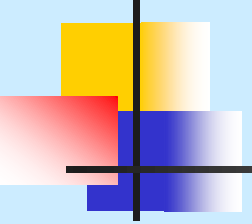


鼓室口

咽口

咽鼓管软骨段

咽鼓管骨段

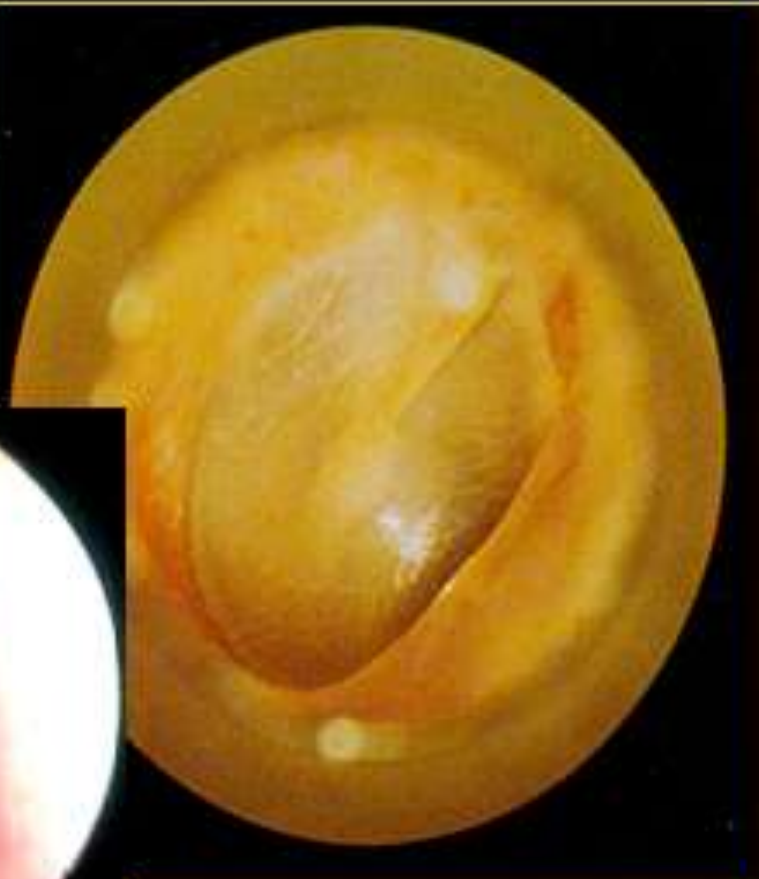


**The eustachian tube ventilates the middle ear, protects it from pathogenic organisms in the nasopharynx, equilibrates pressure across the tympanic membrane, and allows drainage of secretions from the middle ear into nasopharynx.**



Acute otitis media

Normaal TV



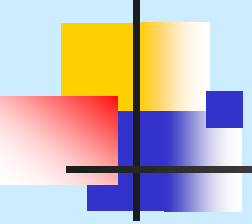
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**At rest , the eustachian tube is closed.**

**During swallowing, yawning, or sneezing, the nasopharyngeal orifice of eustachian tube is opened transiently.**



**The anatomy of the eustachian tube of infants is different from adult's .**

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- **The infantile eustachian tube is more horizontal orientation, shorter length, and more patulous configuration than adult.**



## 二、 Pathogenesis

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- Any process that interferes with normal opening of proximal ( nasopharyngeal ) end of the eustachian tube or mucociliary clearance mechanism causes OME

*Otitis media met efusie – secretoire otitis media  
glue ear ...*







## **(1)、mechanical obstruction:**

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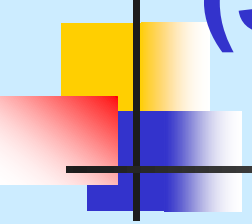
- **large or infected adenoids**
- **turbinate hypertrophy**
- **neoplasm of nasopharynx**
- **nasopharyngeal edema  
or inflammation**



## **(2).Allergy**

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- **Allergy reaction affects both mucociliary clearance mechanism and normal eustachian tube opening.**

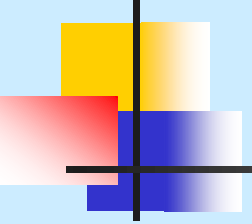


## **(3).Abnormal eustachian tube anatomy**

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- **Such as:**

**cleft palate deformities can impair eustachian tube function.**



**Functional disorders of eustachian tube → negative pressure in tympanic cavity → veins in mucous be dilated and be congested → vessels permeance be increased → serum in vessels be exuded into tympanic cavity → middle ear effusion**



## SIGNS & SYMPTOMS

- **Neonates/Infants:** change in behavior, irritability, tugging at ears, decreased appetite, vomiting.
- **Children(2-4):** otalgia, fever, noises in ears, cannot hear properly, changes in personality
- **Children (>4):** complain of ear pain, changes in personality



# Physical Examination

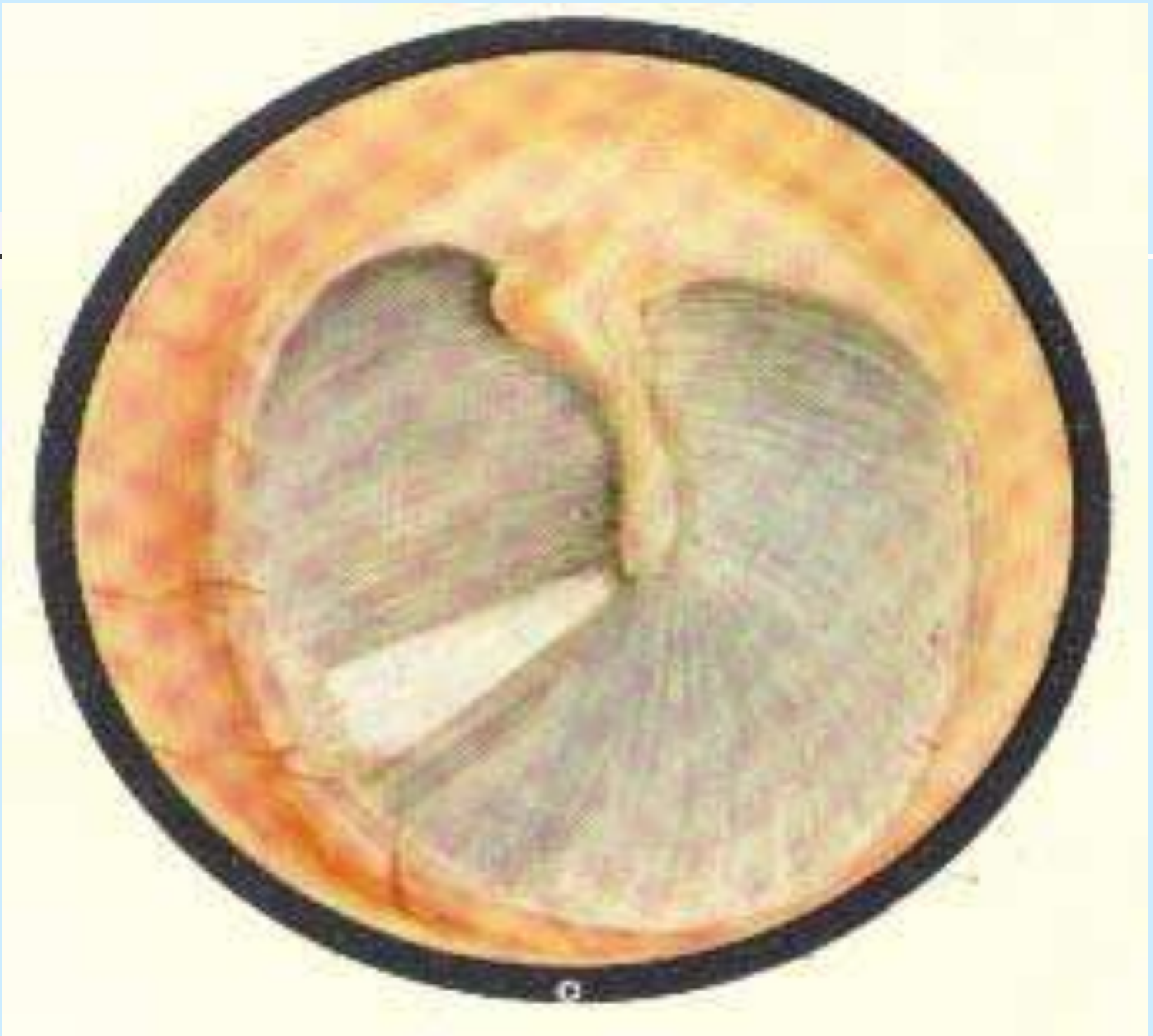
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**Tympanic Membrane to be retracted , dull , opaque . color can range from : light pink to amber and even dark blue.**



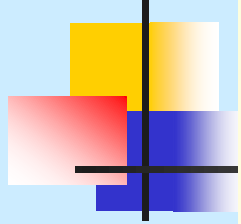
## On Physical exam...

- The classic description for Otitis Media is an erythematic, opaque, bulging tympanic membrane with loss of anatomic landmarks including a dull/absent light reflex.
- Pneumatic Otoscopy: decreased tympanic membrane mobility











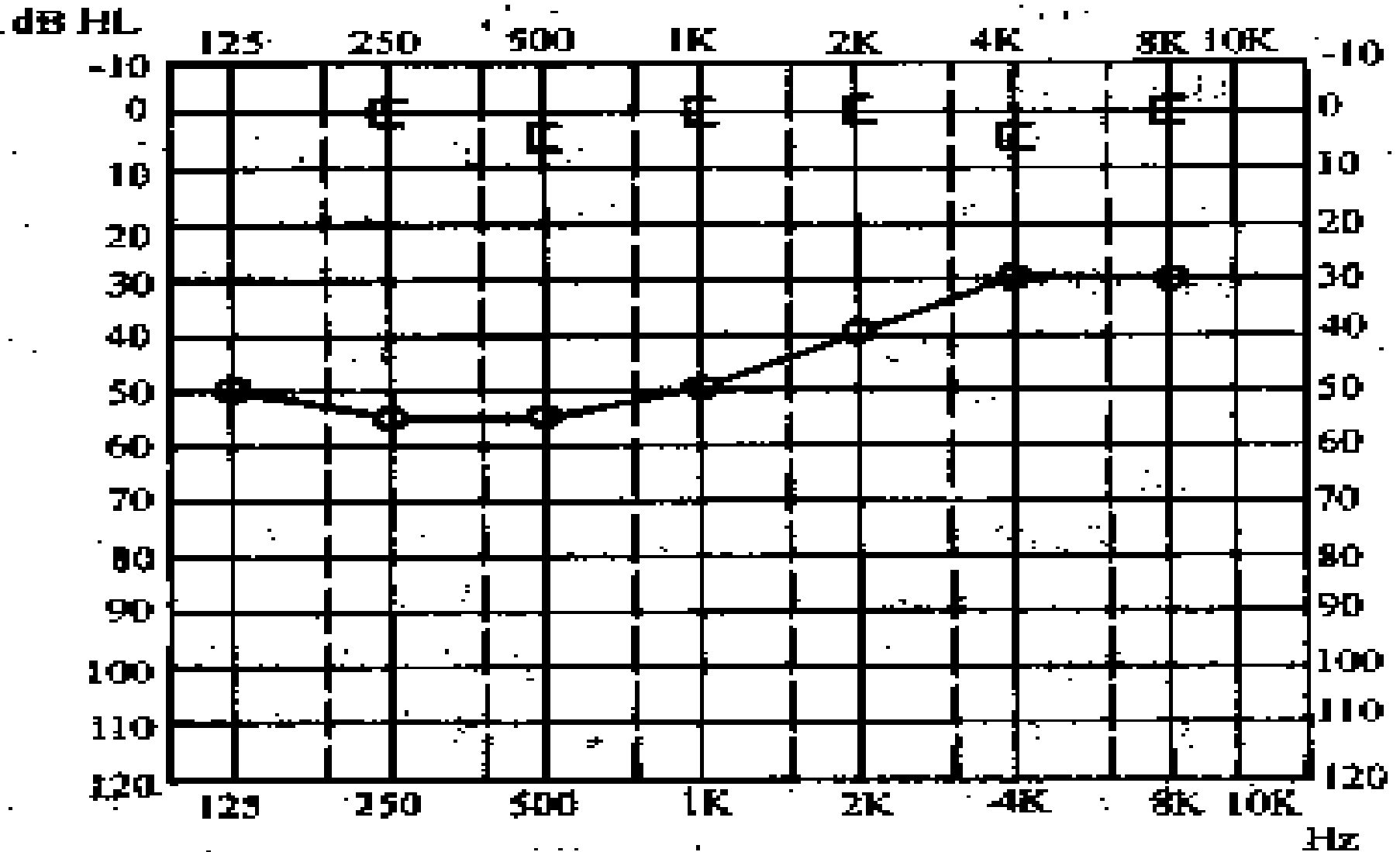
# Audiometric Testing

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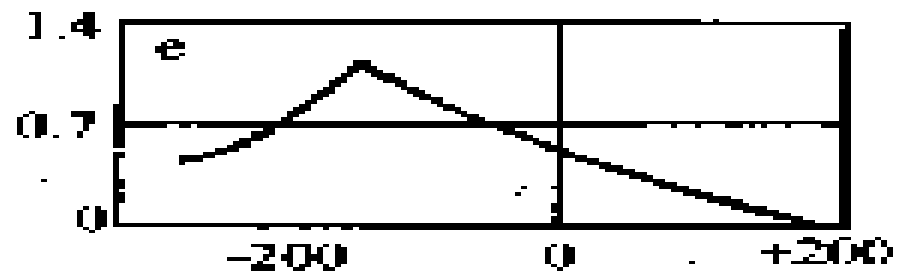
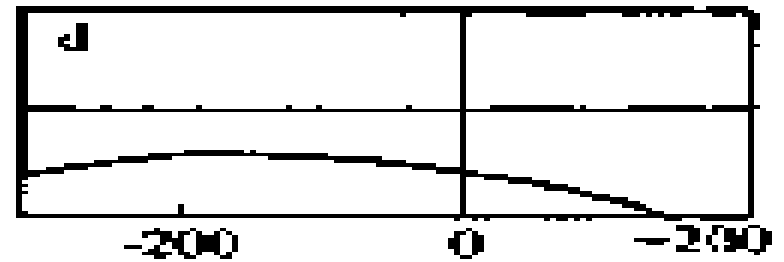
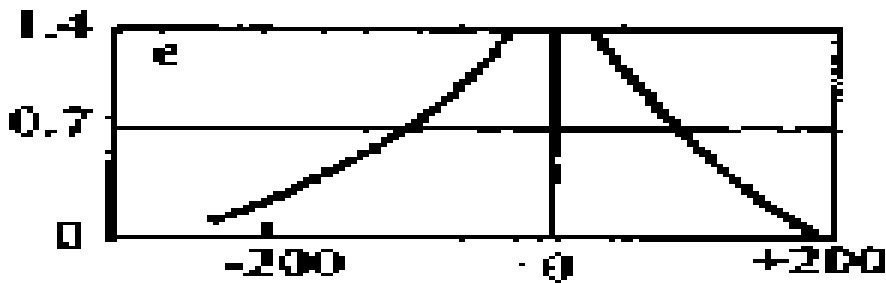
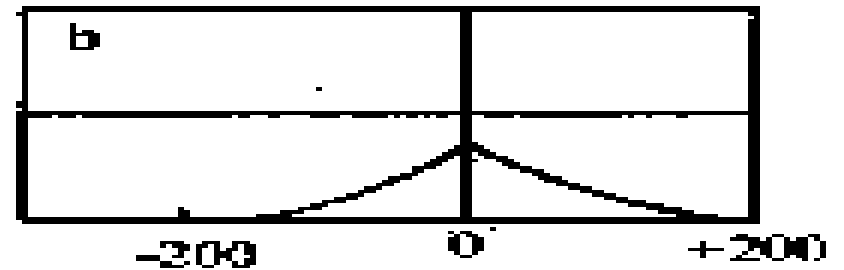
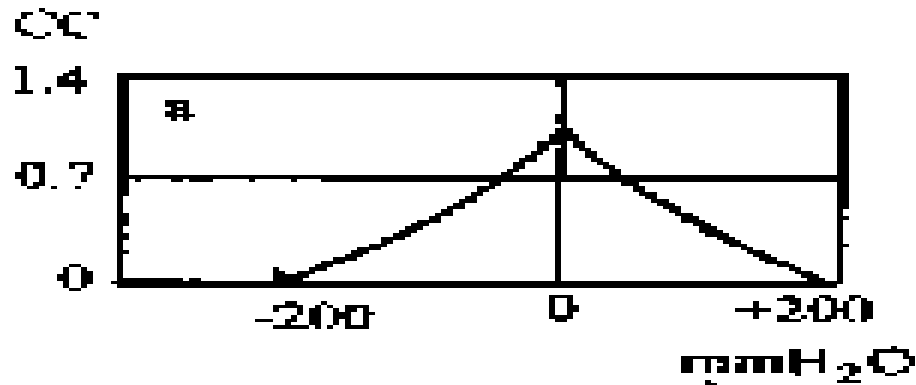
- reveals:

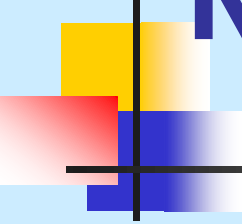
**Mild~middle levels of  
conductive hearing loss**

# Audiogram



# Acoustic Immittance





**Normal acoustic immittance is “type\_A” curve. The curve has peak at “0” Pascal pressure point.**

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- **OME’s Acoustic immittance is “type\_B” curve.  
It is flat tympanometric curve**



## 四、 Diagnosis

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- (一)、 History:

Some patients suffered upper respiratory tract infection before 1 ~ 2 weeks, or suffered rhinitis, adenoids hypertrophy et. Perennial.



## **(三)、Physical examination**

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- **tympanic membrane  
be retracted**
  
- **tympanic cavity effusion**





## **(四)、Audiometric Testing**

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- **Mild ~ middle level  
conductive hearing loss**

**(五)、Acoustic Immittance  
“type\_B” curve**



## 六、 Management

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- **Principles of Management:**
  - **(一)、 Eliminate middle ear effusion , improve middle ear ventilation and drainage.**



**(1)、 Keep expedite nasal cavity  
and eustachain tube**

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- **Child : 0.5%ephedrine and  
furacilline solution**

**Adult : 1% ephedrine and furacilline  
solution**



## **(2)、Eustachian tube insufflation**

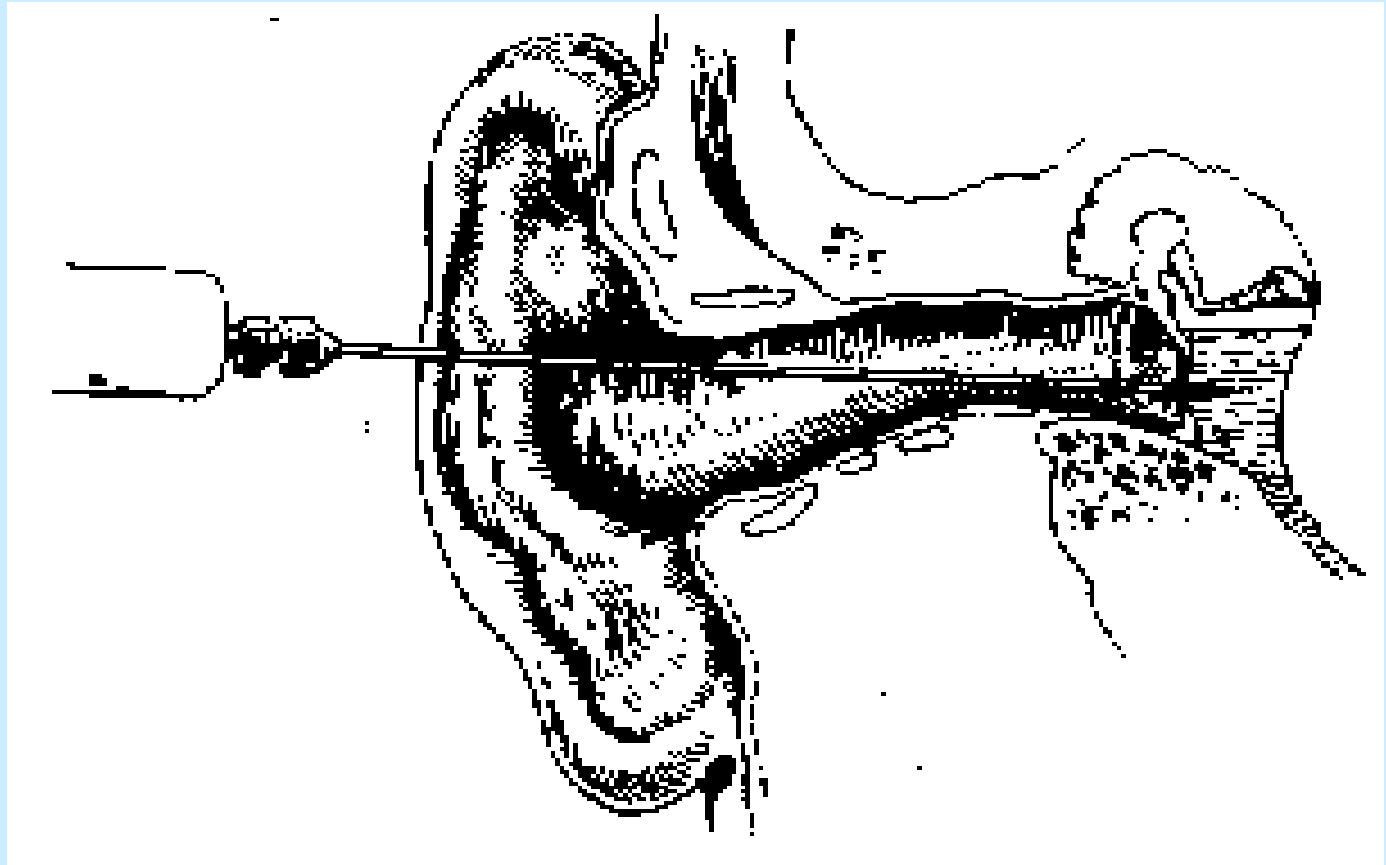
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**Valsalva method**

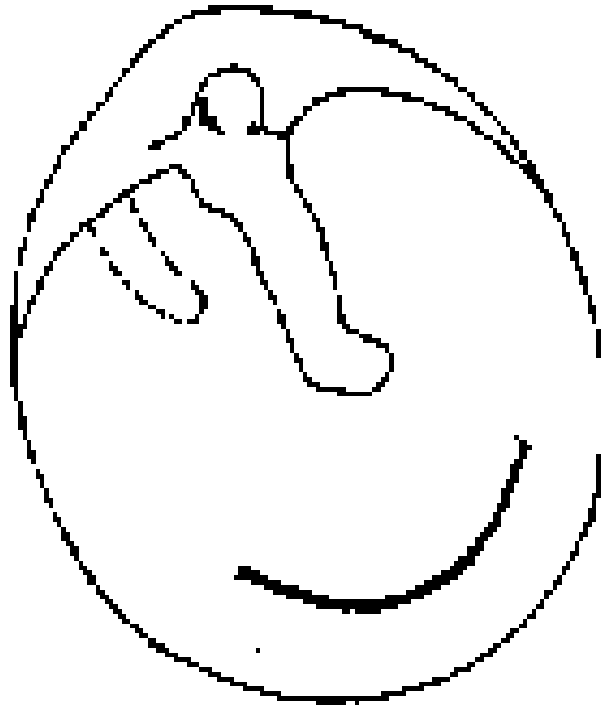
**Politzer method**

**Catheterization**

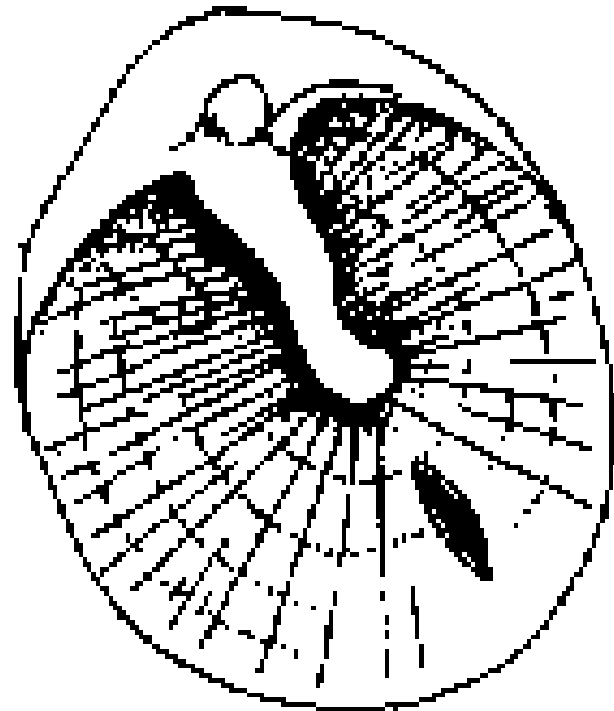
## ( 3 ) 、 Puncture of Tympanum



## (4)、Tympanotomy

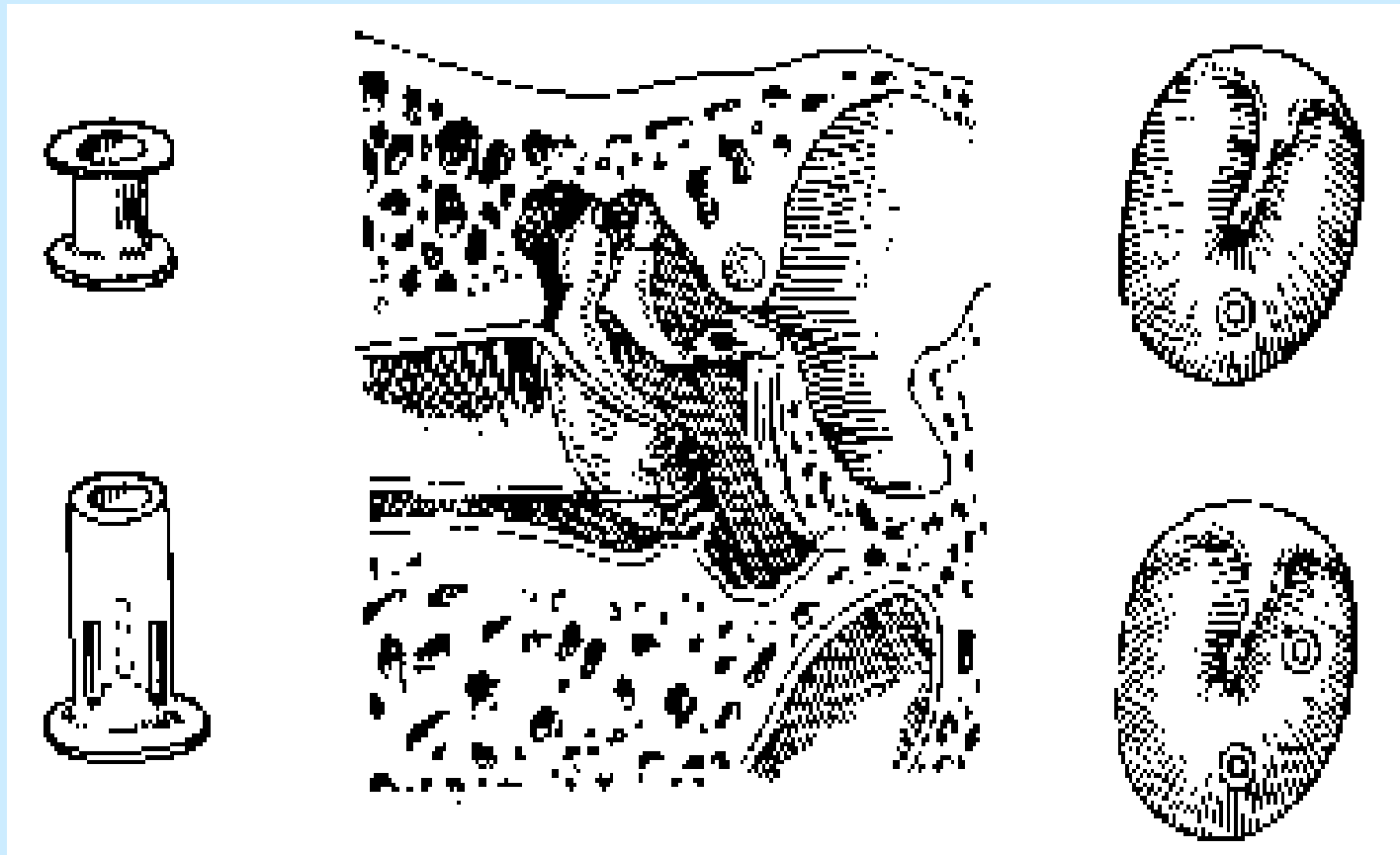


(1)



(2)

# (5)、 Tympanostomy Tube





## **(二) 、 Management of etiology**

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**Treatment nasal and nasopharyngeal diseases**

**Example:**

**adenoid hypertrophy\_\_\_**

**adenoidectomy**

**radiation of nasopharyngeal carcinoma**





## **(三) 、 Antibiotic treatment**

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- **Penicillin**
- **Cephradine**
- **Treatment maintains 3~5 days by oral(mild) or by injection,IV(severe)**



## (四)、Steroid treatment

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- **Dexamethasone :**

**Adult: 5~10mg/day,  
3~5days,by  
injection,IV.**

# Surgical therapy

- Ventilation tubes
- Adenoidectomy



*Maw, 1993*

- Beneficial effect of tubes or adenoidectomy compared with no surgery
- Further improvement when combination of tubes and adenoidectomy

*Gates, 1987*

After adenoidectomy

- significant less time with effusion
- longer time to first recurrence
- fewer surgical re-treatments





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# Prevention

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- Exercise
- Prevent flu
- Treatment nasal and nasopharyngeal diseases

## *Tympanostomy tube insertion*

- Unresponsive OME  $>3$  months bilaterally, or  $> 6$  months unilateral, sooner if associated hearing problems
- Recurrent MEE with excessive cumulative duration
- Speech – language delay
- Recurrent AOM -  $>3/6$  months or  $>4/12$  months
- Eustachian tube dysfunction
- Suppurative complication
- Severe tympanic membrane retraction



# COMPLICATIONS

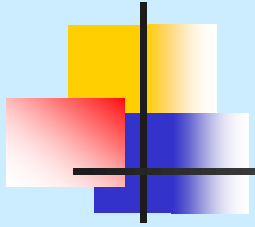
- **Hearing loss:** (conductive, sensorineural, mixed)
- Acute mastoiditis: before the advent of antibiotics
- Chronic perforation of the TM
- Tympanosclerosis
- Cholesteatoma
- Chronic suppurative OM
- Cholesterol granuloma: 'Blue drum syndrome'
- Facial nerve paralysis



## **5. Questions**

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- 1. What is the otitis media with effusion (OME)?**
- 2. What are the essential causes of OME?**
- 3. Please represents main clinical presentations of OME..**



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Thank you