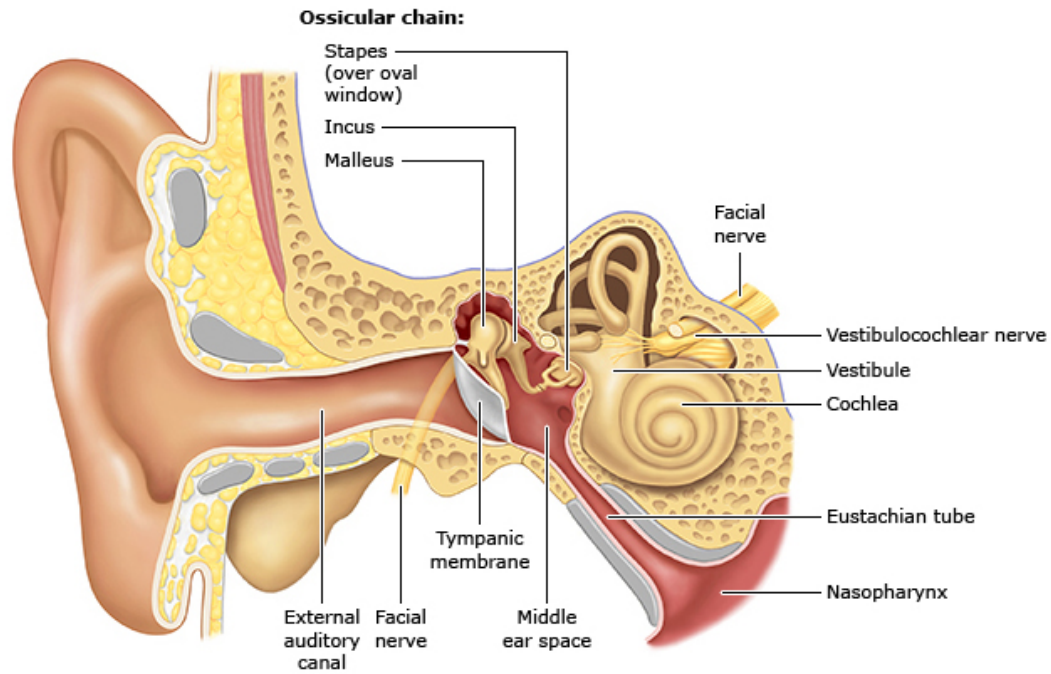


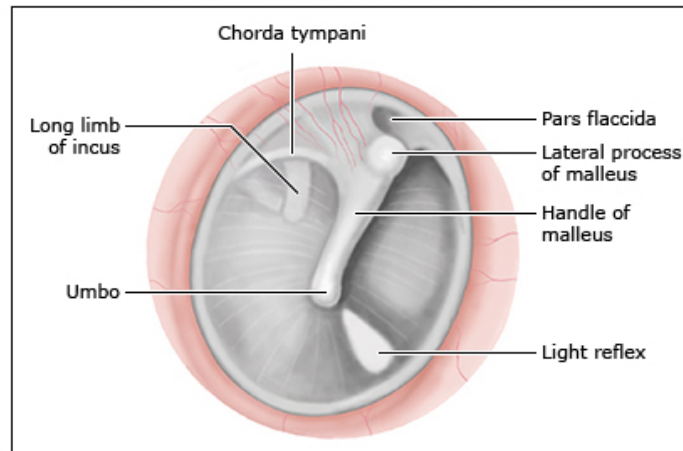
Honk Kong East Cluster
Integrative Medicine Seminar
中西醫結合研討會 2020-21

Hearing loss and Tinnitus
耳聾耳鳴

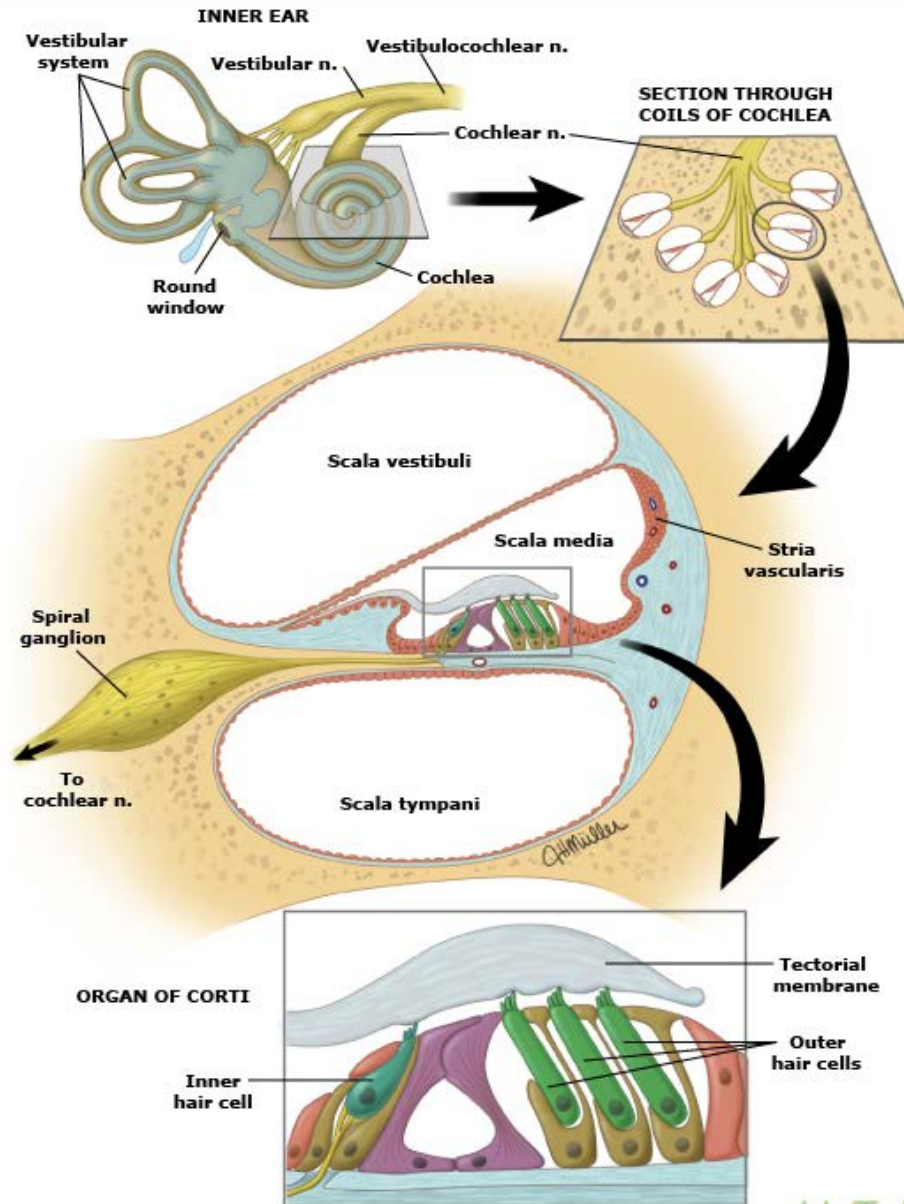
Dr. Wong Chui Yan Fiona 黃翠欣醫生
Department of Ear, Nose and Throat
Pamela Youde Nethersole Eastern Hospital



Otoscopic view of right tympanic membrane



Cochlear and vestibular anatomy



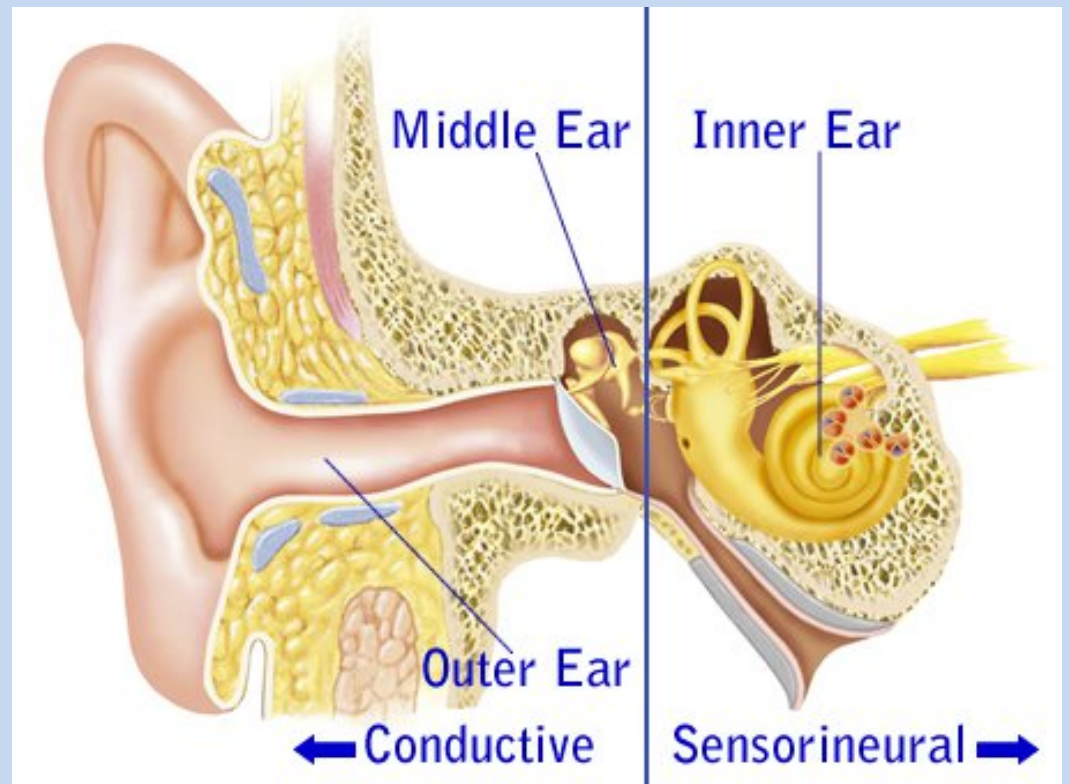
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Normal ear drum



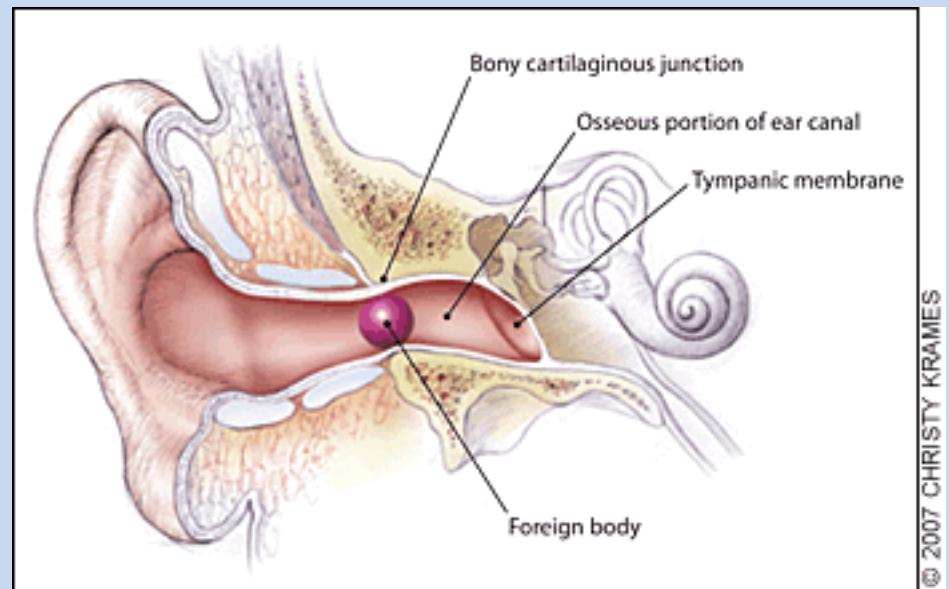
Causes of Hearing Loss

- Conductive 傳導性
- Sensorineural 神經性



Conductive hearing loss

- External ear 外耳
 - Pinna – microtia
 - External auditory canal – ear wax, foreign body, infection (otitis externa), tumour of EAC



Conductive hearing loss

- Middle ear 中耳

- Eardrum – Chronic suppurative otitis media 慢性化膿性中耳炎, tympanosclerosis, traumatic perforation
- Otitis media with effusion 中耳積水
- Cholesteatoma
- Stapes – otosclerosis
- Ossicular chain discontinuity
- Neoplastic causes include glomus tympanicum, squamous cell carcinoma



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Sensorineural hearing loss

- Presbycusis 老年性耳聾
 - start > 40 yrs, affect 1/3 >65 yrs old
 - likely cumulative effect of different insult to cochlear
 - decreased number of spiral ganglion cells and hair cells
- Infection – viral, bacterial
- Tumour – acoustic neuroma
- Autoimmune
- Ototoxicity

Sensorineural hearing loss

- Trauma 創傷
 - Noise induced
 - work at 85dBA av 40hr/wk
 - 3dB increase = double energy exposure
 - Head injury → fracture temporal bone
 - Perilymph fistula, eg. barotrauma - diving
 - Blast injury - explosion
- Metabolic – DM, hypothyroidism
- Congenital

Physical examination and Investigations

- Otoscopy 耳鏡
- Tuning fork test 音叉測試
- Facial nerve integrity 面神經
- Pure tone audiogram 純音聽力測試
- Tympanogram 鼓室圖
- Brainstem auditory evoked response 腦幹誘發神經測試
- MRI 磁力共振
- CT 電腦掃瞄



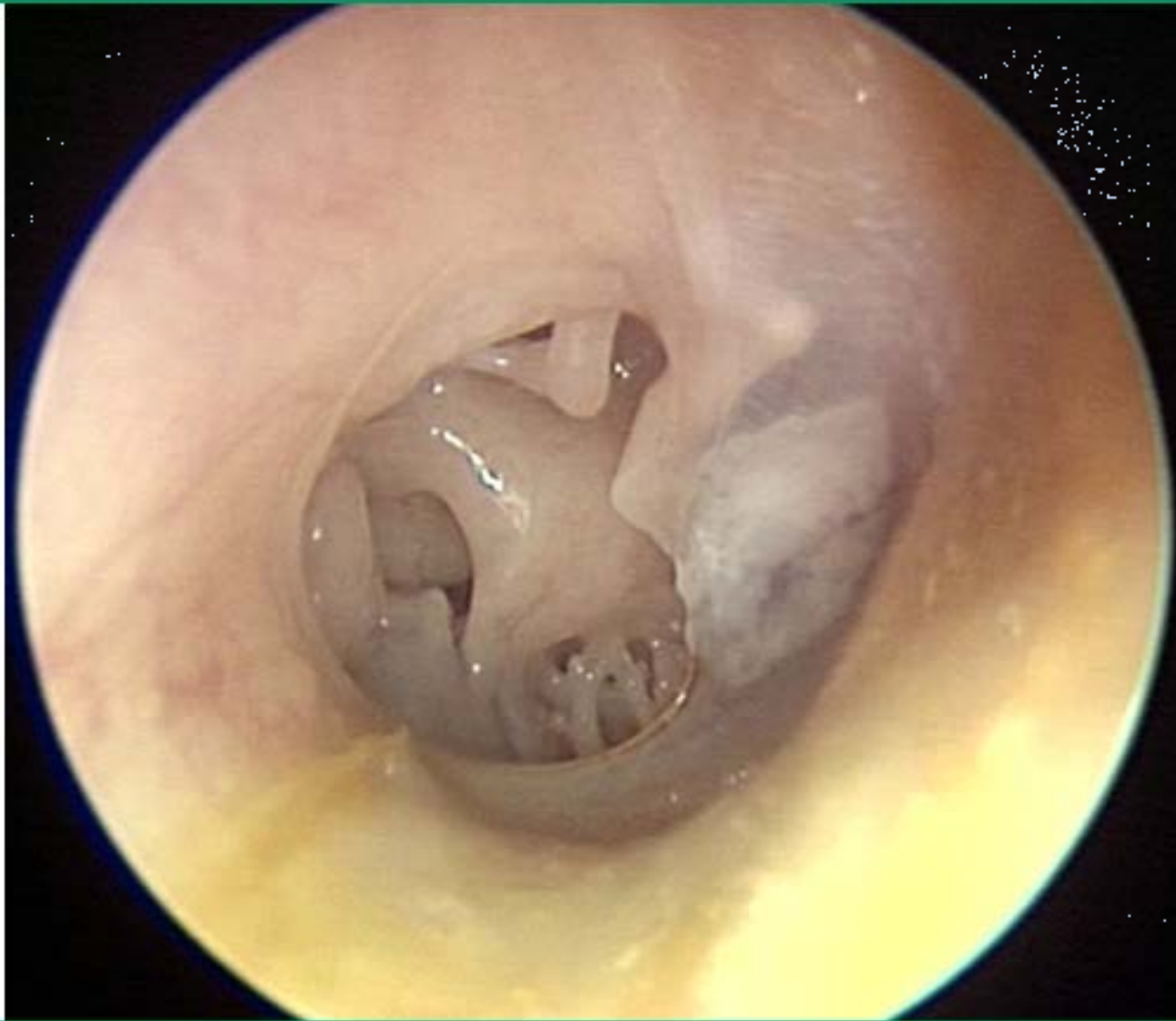
Treatment

- Avoid noise exposure, ear plug
- Avoid ear picking
- Hearing aid

3 special conditions

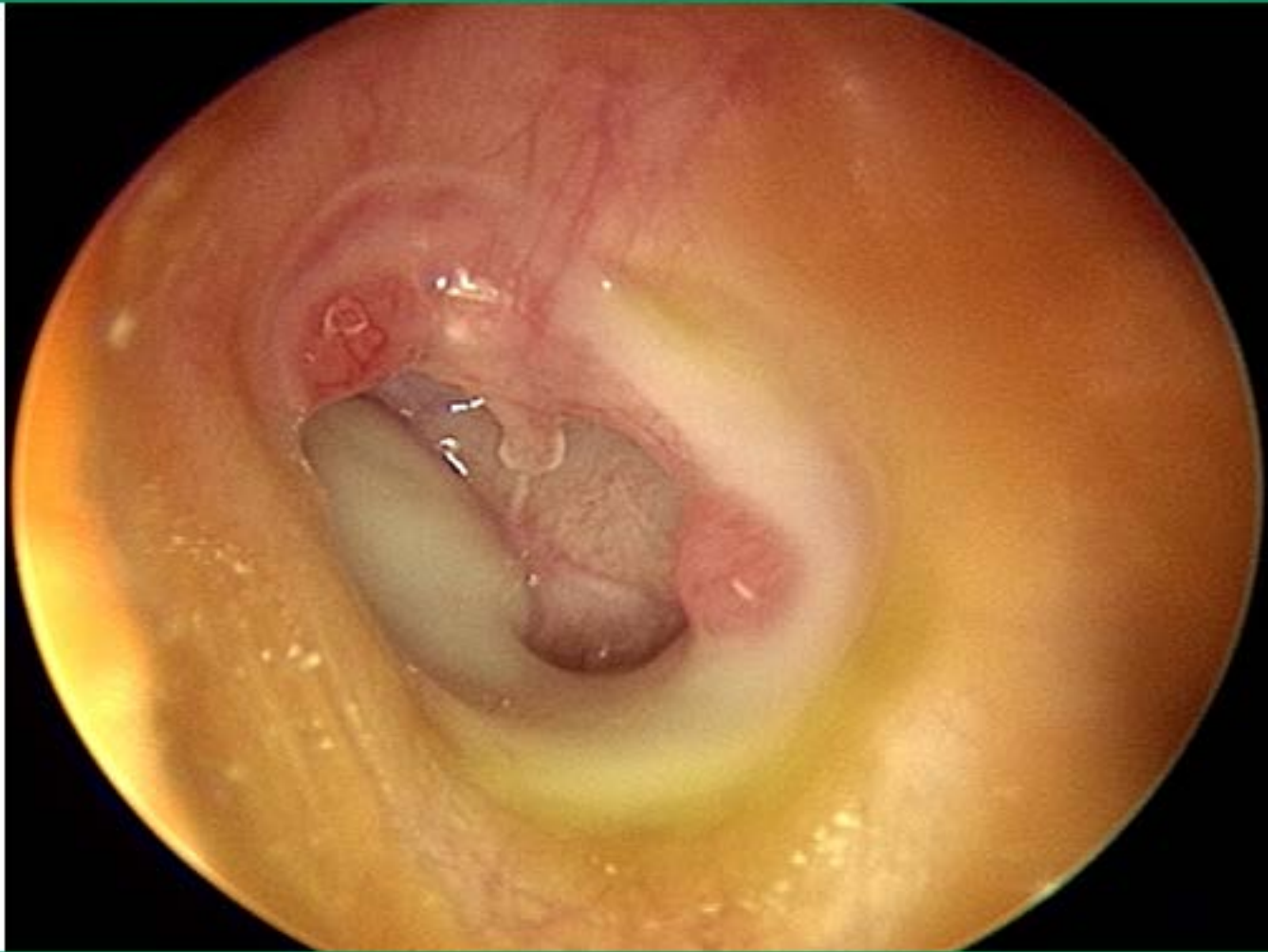
- 1. Chronic suppurative otitis media
慢性化膿性中耳炎
- 2. Otitis media with effusion
中耳積水
- 3. Sudden sensorineural hearing loss
突發性神經性失聰

Dry subtotal tympanic membrane perforation



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Draining tympanic membrane perforation



Courtesy of Glenn C Isaacson, MD, FAAP.

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Conservative

–Water precaution, Eardrops

Surgery

–鼓膜成形術/鼓室成形術

Myringoplasty/ Tympanoplasty

- Perforated eardrum
耳膜穿孔
- Control or prevent ear infection
控制或預防中耳感染
- Hearing loss
弱聽

Intended Benefits and Expected Outcome

預期結果

- Intact eardrum (85% success rate)
完整鼓膜 (成功率85%)
- Control or prevent ear infection
控制或預防中耳發炎
- Hearing improvement
改善聽力
- There is chance of incomplete relief of symptoms and recurrence
有機會不能完全改善症狀和有可能復發

Operation procedure

手術程序

- Skin incision at the tragus, or in front of or above the ear. A piece of perichondrium, or fascia is harvested to repair the eardrum

醫生會在耳屏或耳前、耳上做一個切口。
醫生會採集一塊軟骨膜軟骨膜或筋膜，用以修補耳膜

Postoperative care

術後護理

- Bed rest, may take medicine for tiredness or dizziness

術後短暫會感疲倦、暈眩，請卧床休息，醫生可處方藥物

- Can take food after healthcare professionals assessment. Usually 4-6 hours after operation

術後約4-6小時，經護理人員評估後可進食

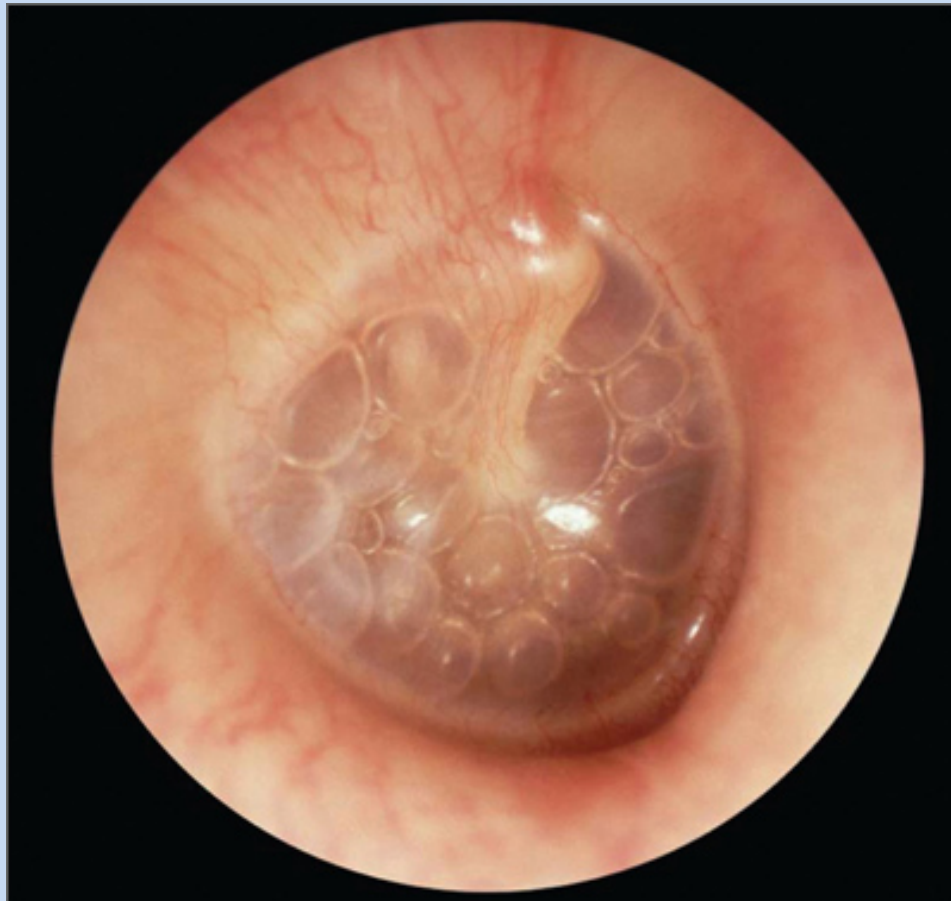
- Pressure dressing will be applied for 1 day

傷口或有壓力敷料敷紮頭部

Take home message

出院指導

- Keep wound dry, especially during shampoo
保持傷口乾爽，洗頭時勿讓水流入耳道
- Please open mouth when sneezing
避免強擤鼻涕，打噴嚏應將開口
- Avoid carrying heavy object, strenuous exercise and water sports
勿作劇烈運動或搬動重物，水上運動如游泳，直至傷口完全痊癒
- Avoid taking aeroplane for 3 months
術後三個月，避免乘搭飛機以防氣壓改變令耳膜穿破



Myringotomy +/- Ventilation Tube Insertion

鼓膜切開術+/- 置管

- To make a hole in the eardrum (myringotomy)
耳膜開孔
- Placement of a ventilation tube through eardrum
置管

Intended Benefits and Expected Outcome

預期結果

- To normalize the middle ear pressure
恢復中耳壓力
- To drain the middle ear
中耳引流
- Hearing improvement
改善聽力
- There is chance of incomplete relief of symptoms and recurrence after extrusion of the grommet
有機會置管排出後症狀不能完全緩解和有可能復發

Short-term tympanostomy tubes

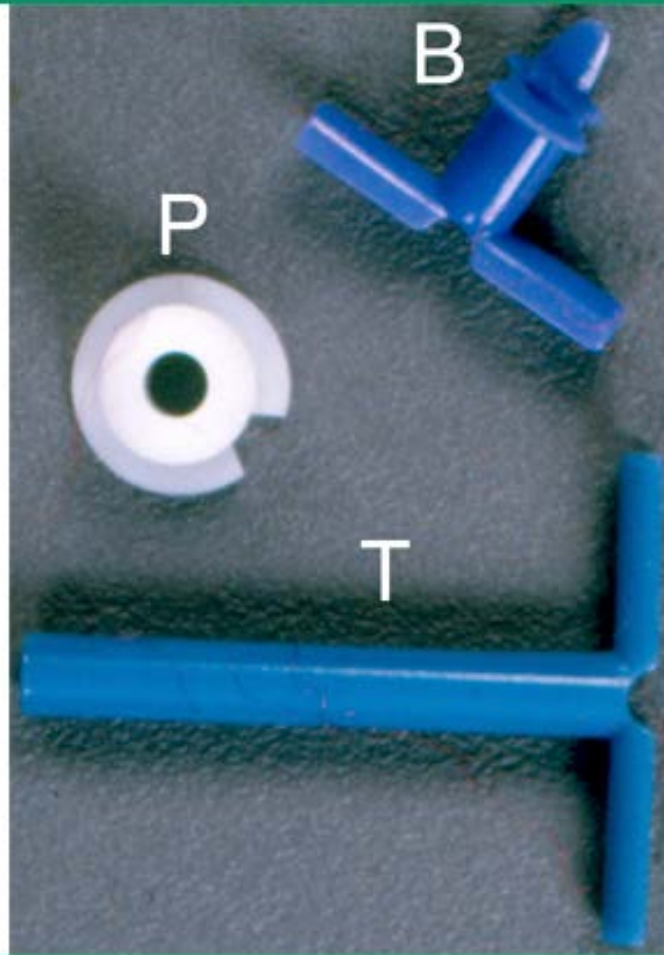


Short-term tympanostomy tubes are intended to remain in the eardrum for 8 to 18 months. They include Armstrong grommet tubes (A), Reuter-bobbin (R), Sheehy (S), and Paparella (P).

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Long-term tympanostomy tubes



Long-term tympanostomy tubes are intended to remain in the eardrum for 15 months or longer. They include butterfly (B), Paparella (P), and T-tube (T).

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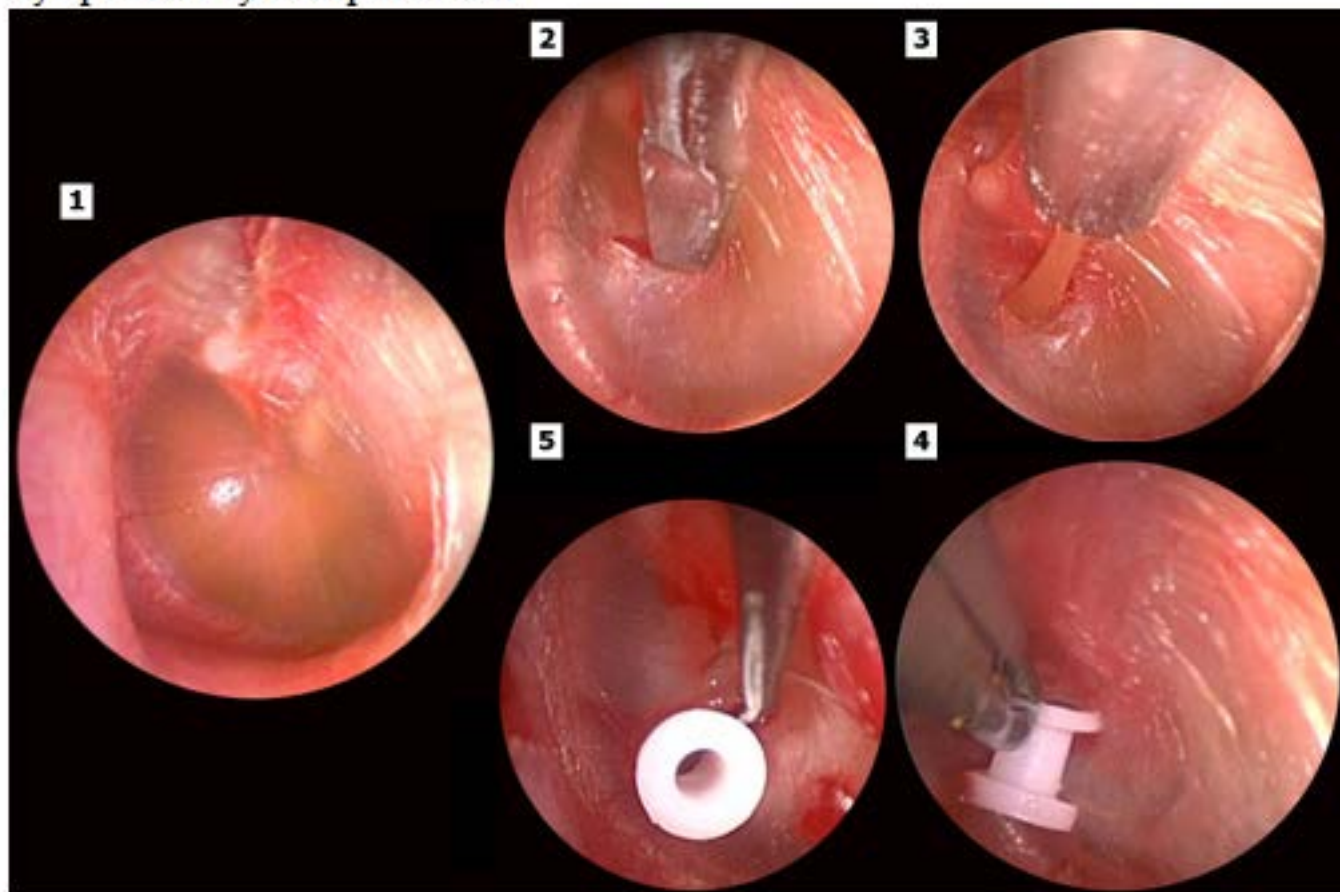
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The Procedure

手術過程

- The operation is done under local or general anaesthesia.
手術會在全身或局部麻醉下進行。
- Under the microscope, a small incision is made over the eardrum and the middle ear fluid is aspirated.
醫生會利用顯微鏡在耳膜上做一個小切口，把中耳液抽出
- A ventilation tube may be inserted to allow ventilation of the middle ear
醫生或會置入一條通氣導管，以便中耳通風。

Tympanostomy tube placement

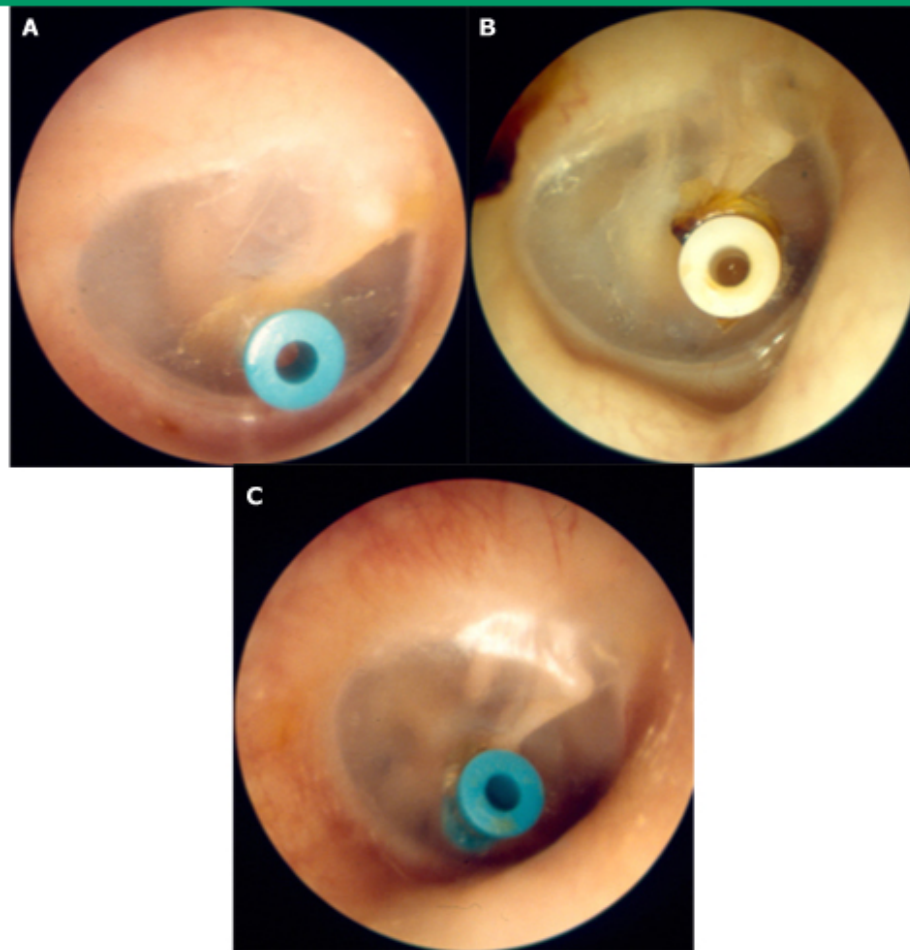


1) Otitis media with effusion; 2) anterior incision of the drum; 3) aspiration of effusion; 4) tube inserted with cuff forceps; 5) completed tube placement.

Courtesy of Glenn C Isaacson, MD.

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Tympanostomy tube patency



Proper function of a tympanostomy tube is assured if it is seen to span the eardrum, its lumen is unobstructed, and no middle ear effusion is present. Panel A above depicts a tube that is in place and patent. Panel B depicts a tube that is in place but occluded. Panel C depicts a tube that is in place and patent, but appears to have extruded.

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Sudden sensorineural hearing loss

突發性神經性失聰

- viral infection, decreased blood supply to the ear, and remote possibility of nerve tumour
- 病毒感染或血管閉塞；絕少數或跟良性耳神經腫瘤有關
- 30dB loss over 3 frequencies in 3 days
- Steroid, Trental, Intratympanic steroid, Hyperbaric Oxygen therapy

Tinnitus 耳鳴

- Perception of sound without external stimulus
- 10-15% population
- Male and female, prevalence highest 40—70 years old

Classification 分類

- Pulsatile 脈動性耳鳴
 - Vascular causes
 - Patulous eustacian tube
 - Muscle spasm
- Non-pulsatile 非脈動性耳鳴
 - Sensorineural hearing loss
 - Conductive hearing loss
 - Head trauma, CNS causes eg. meningitis

- Pathophysiology
 - Abnormalities of cochlea, cochlear nerve, ascending auditory pathway or auditory cortex
 - Reduction in auditory nerve input
 - abnormal interaction and increased spontaneous activity of subsystems in nervous system
- Consequences:
 - Difficulty to concentrate
 - Insomnia
 - Anxiety & Depression

Physical examination and Investigations

- Otoscopy
- Pure tone audiogram, Tympanogram
- Unilateteral tinnitus - BAER, MRI IAM
- Pulsatile tinnitus – USG doppler, CT TB

Treatment

- Treat conductive hearing loss or vascular causes
- No definite medicine or surgery
- Vasodilating agents may help relieve 血管擴張劑
- Habituation, tinnitus retraining therapy
- Avoid silence, environmental masking 環境遮蓋

Take home message 重點

- Slowly progressive bilateral hearing loss and tinnitus not uncommon
- Special conditions
 - Sudden SNHL
 - Conductive HL
 - Unilateral tinnitus
 - Pulsatile tinnitus

Thank you

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