

Otosclerosis

- Introduction
- Aetiology
- Pathology
- Clinical Picture
- Examination
- Audiological Tests
- Differential Diagnosis
- Treatment

Otosclerosis

- Oto, sclerosis
 - Mature lamellar bone is replaced by unorganized spongy bone of greater thickness and vascularity
- Common disease, 1: 200
- Frequently in fair females
- Progressive hearing loss
- Familial tendency



Aetiology

- Unknown aetiology
- Disorder affecting growth of collagen
- Many theories:-

Genetic

Race

Sex

Age of onset

Pregnancy

Infection

Immune disorder

Trauma

Metabolic

Vascular

Anat./Histological abn of temporal bone



Pathology

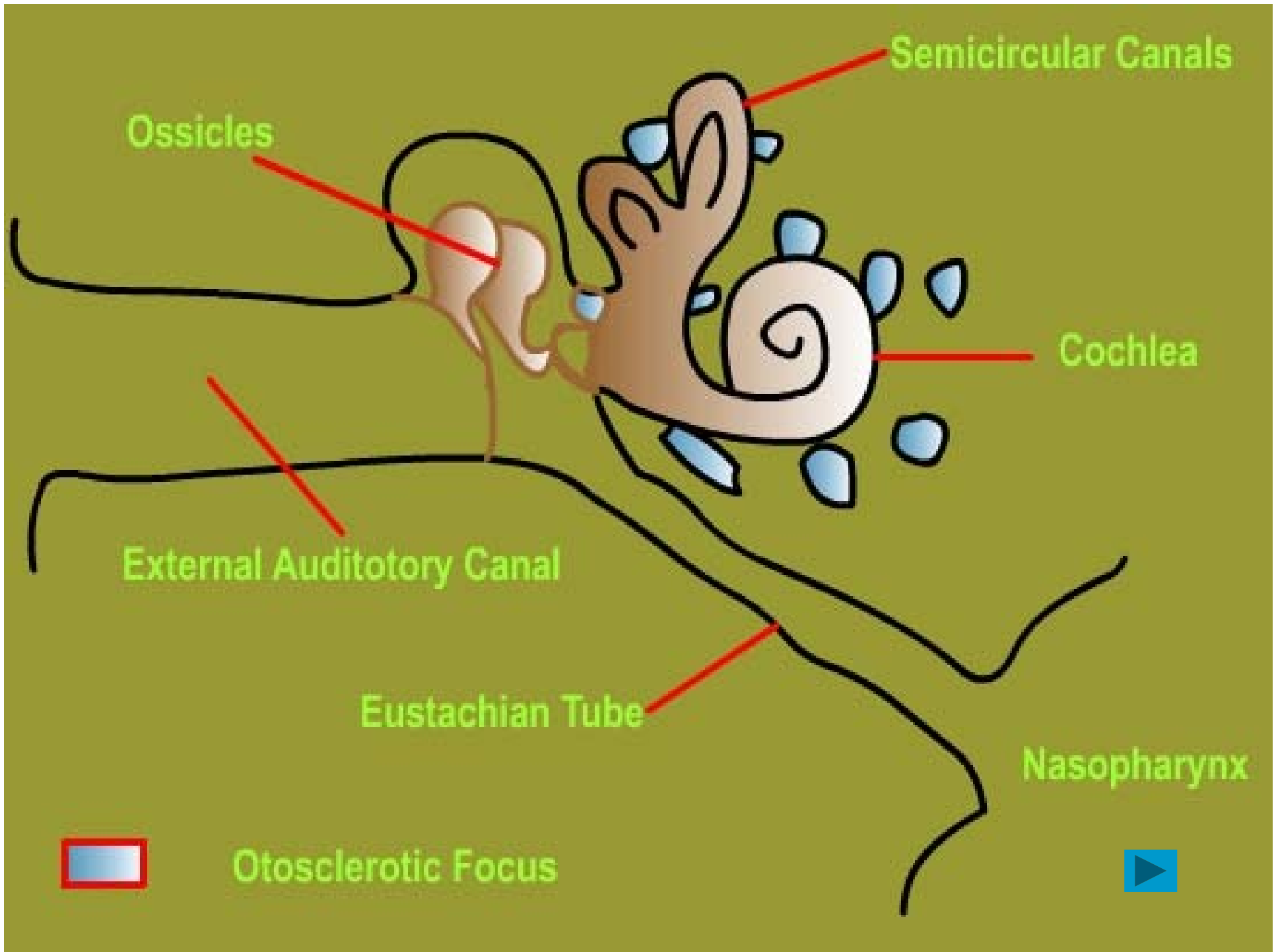
- Hereditary disease
- Disease of otic capsule
- Phases of bone resorption & bone formation
- Removal of mature bone by osteoclasts
- Replacement by woven bone of more cellularity, vascularity and thickness



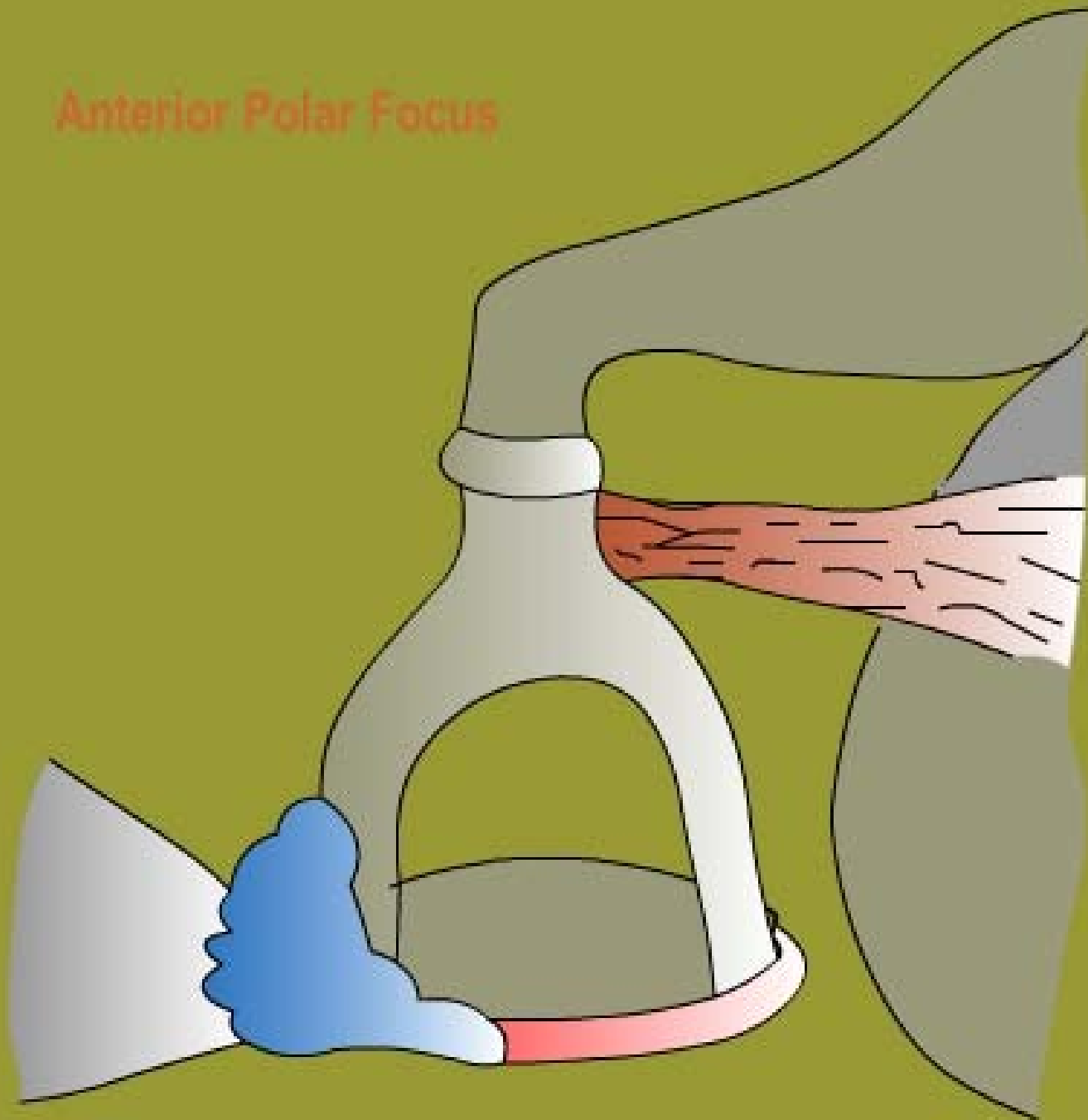
SITES

- Any part of temporal bone
- Fistula ante fenestrum
- Fistula Post fenestrum
- Oval window
- Round window
- Promontory
- Cochlea
- B/L sym. Affection

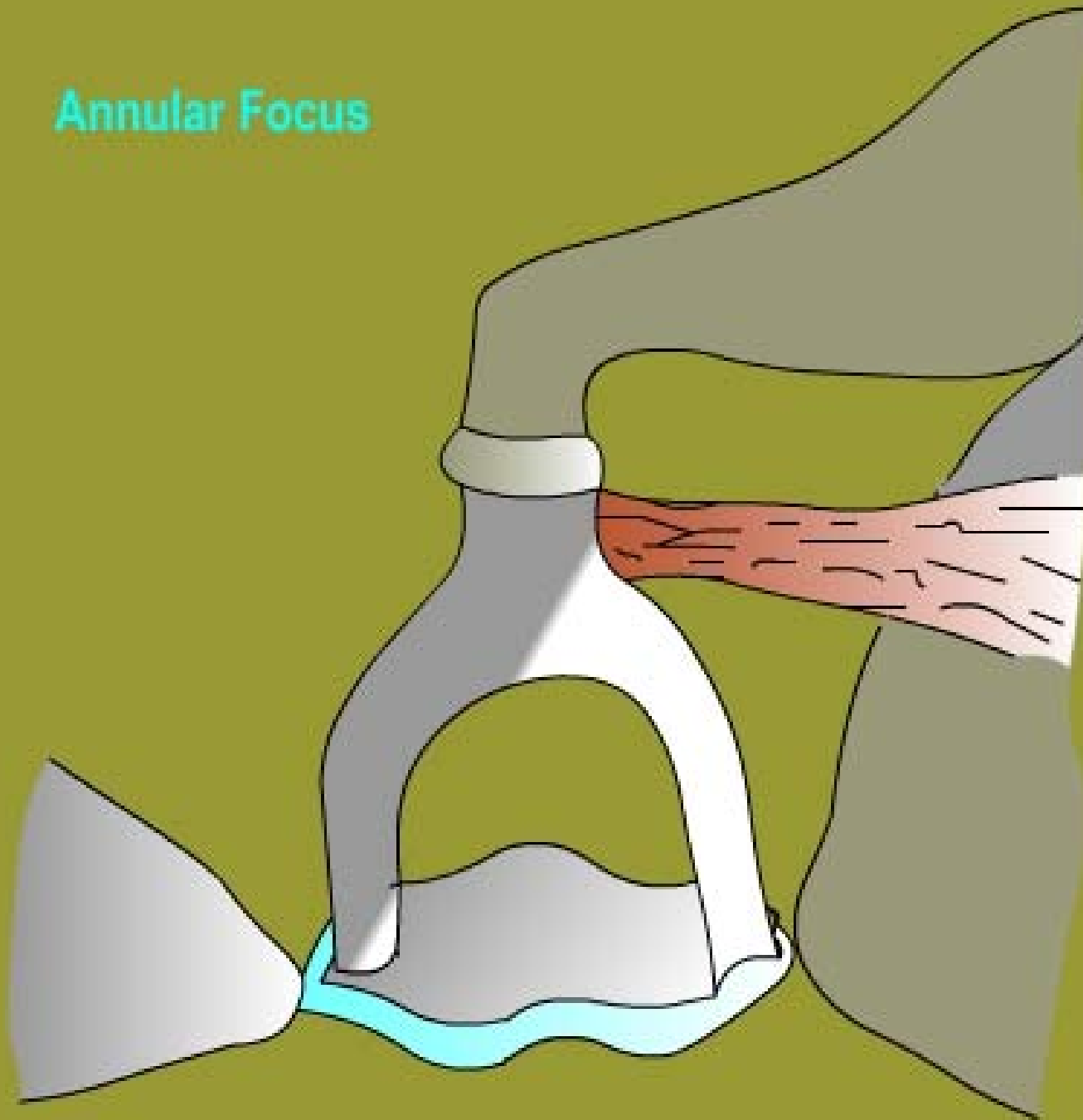




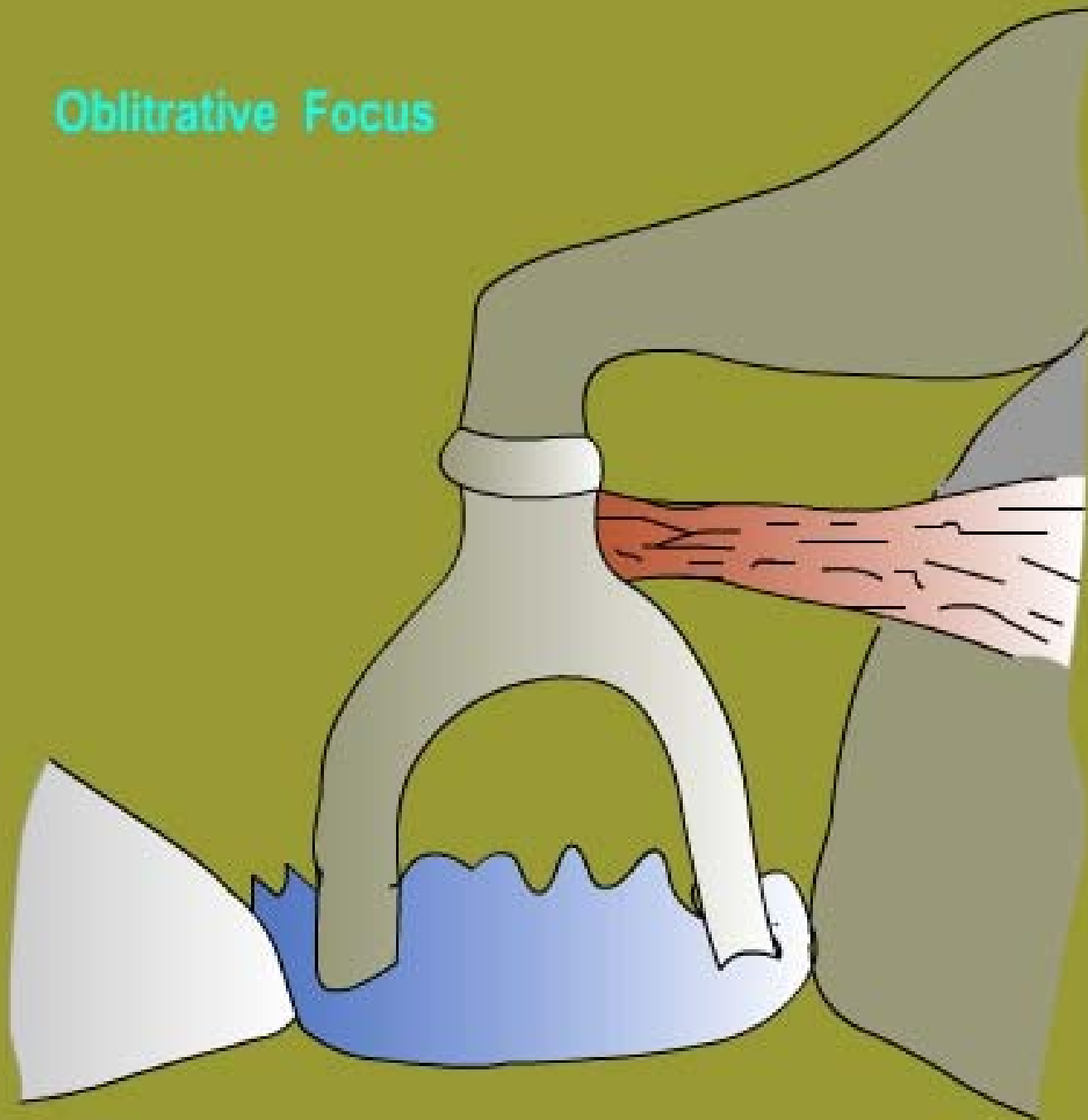
Anterior Polar Focus



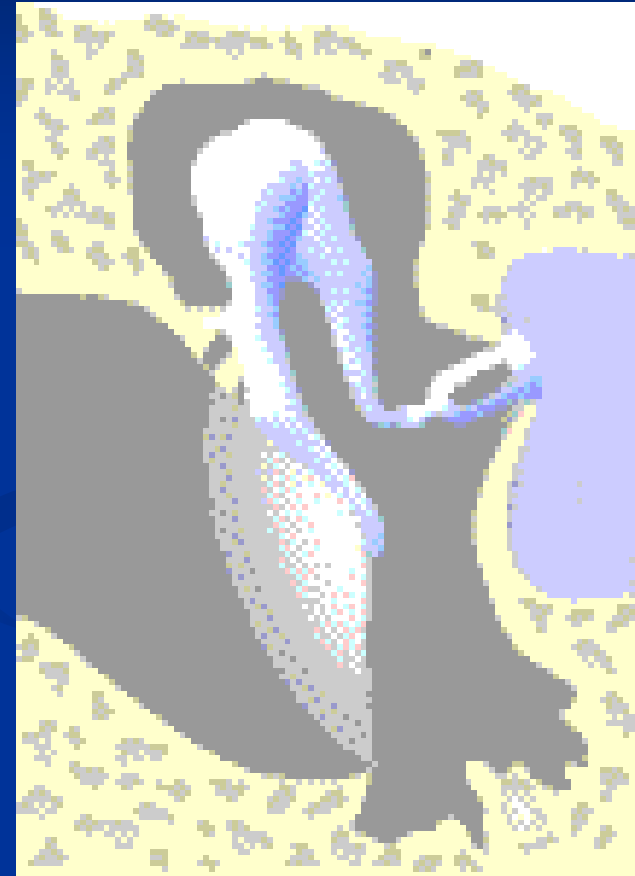
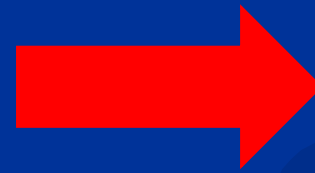
Annular Focus



Oblitrative Focus



Physiologic Effect



Before

After



Symptoms

- Deafness
- Tinnitus
- Paracusis willisi
- Family history
- Low modulated voice
- Vertigo



Examination

- External Ear Examination - Normal
- Tympanic Membrane normal
- Flemingo pink blush
- Eustachian Tube patent
- Blue sclera & fragile bone as part of the disorder Høeje syndrome





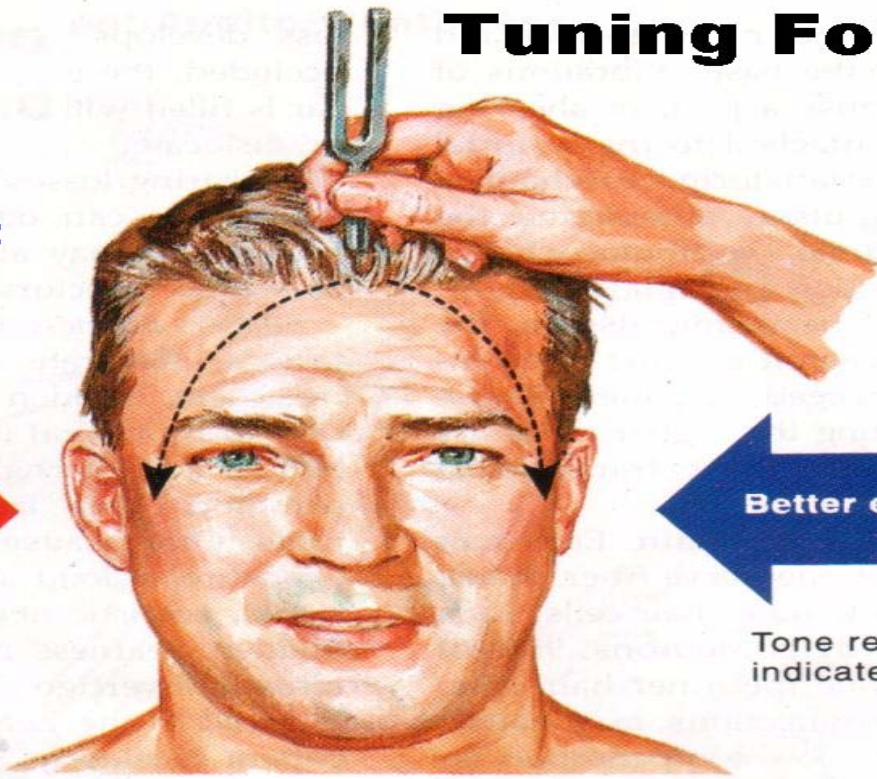
Tuning Fork test

- Rinne's test Negative
- Weber test Lateralized to deaf ear
- ABC Normal



Tuning Fork tests

Weber Test

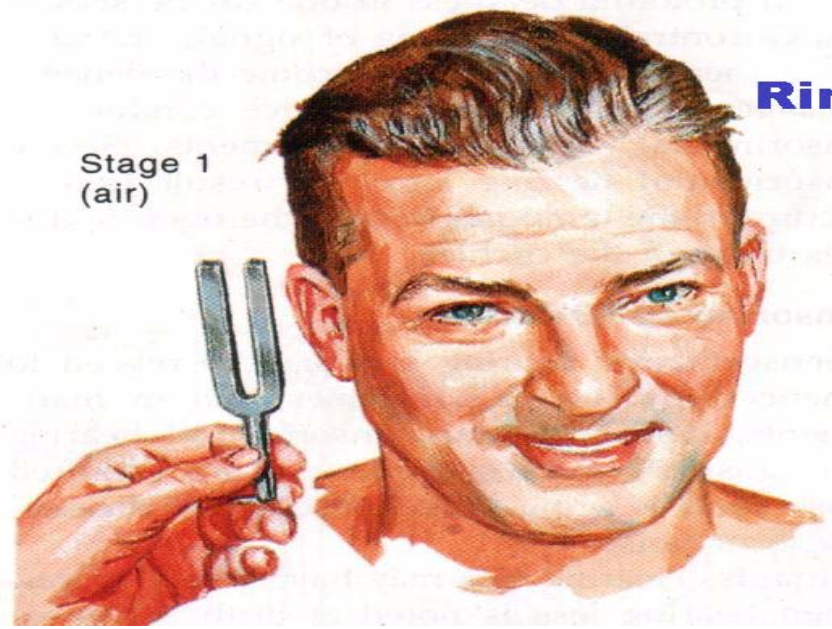


Tone referred to poorer ear indicates conductive loss

Tone referred to better ear indicates sensorineural loss

Rinne's Test

Stage 1 (air)

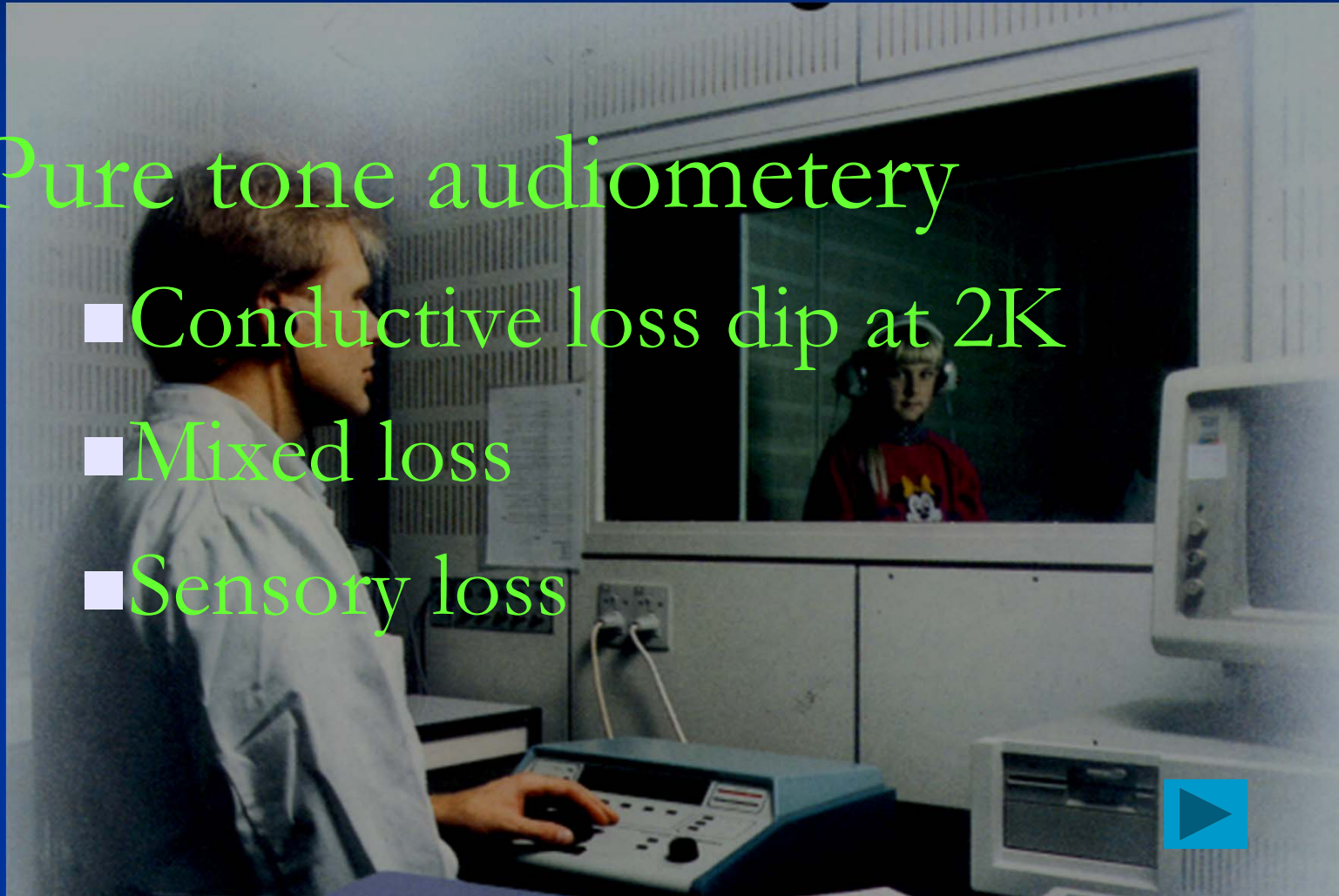


Stage 2 (bone)

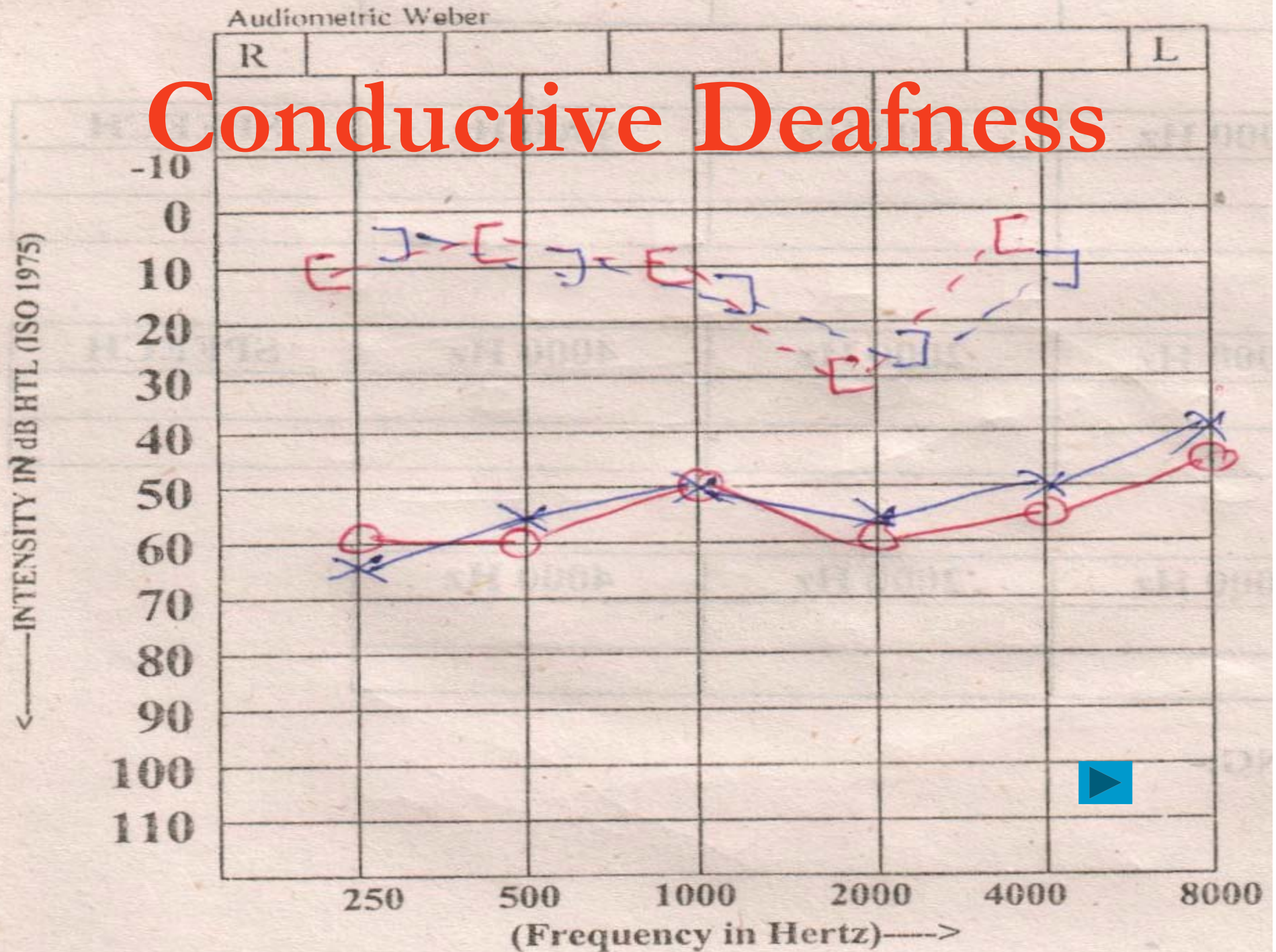


Audiological test

- Pure tone audiometry
 - Conductive loss dip at 2K
 - Mixed loss
 - Sensory loss



Conductive Deafness



Audiometric Weber

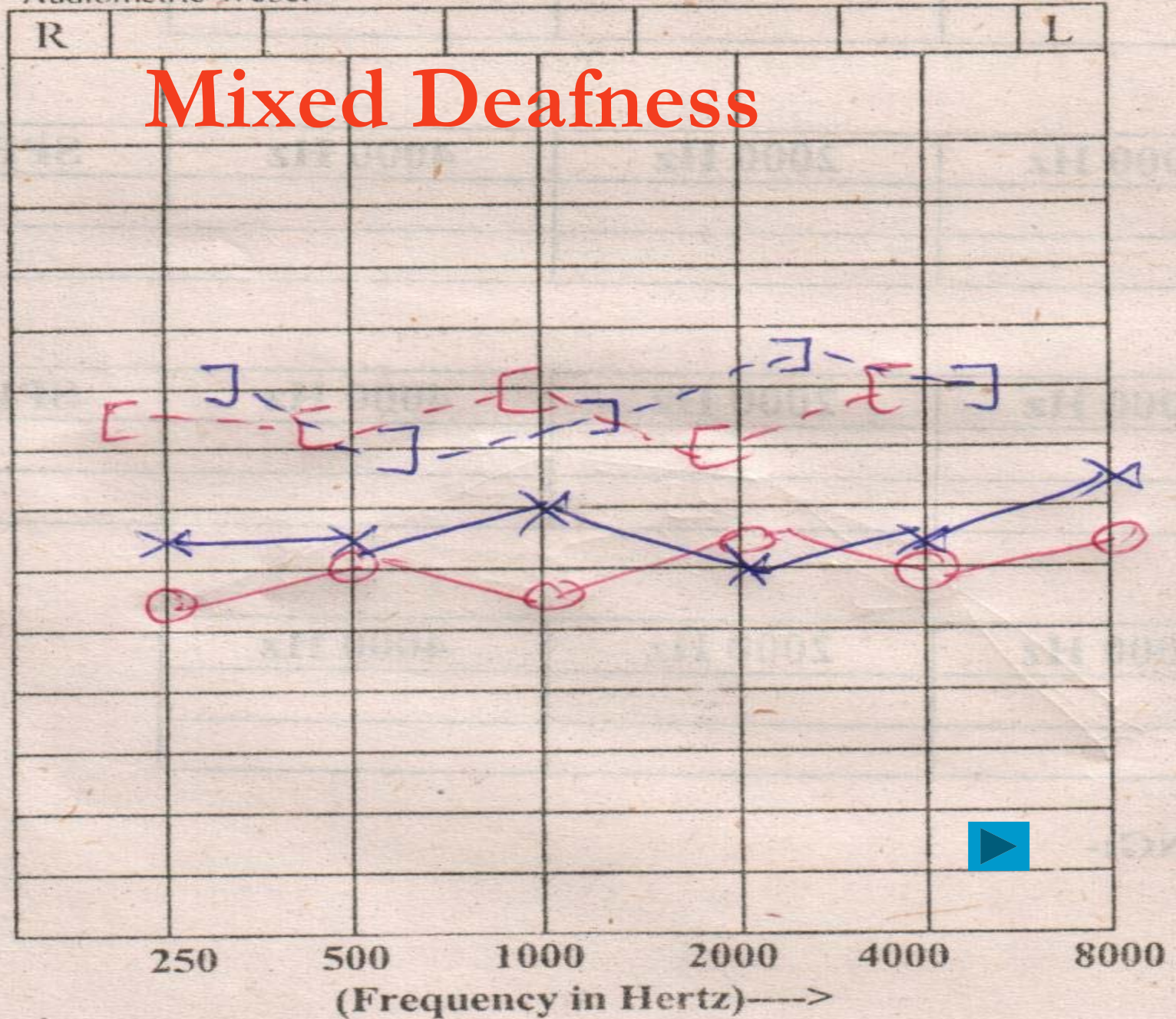
R

L

Mixed Deafness

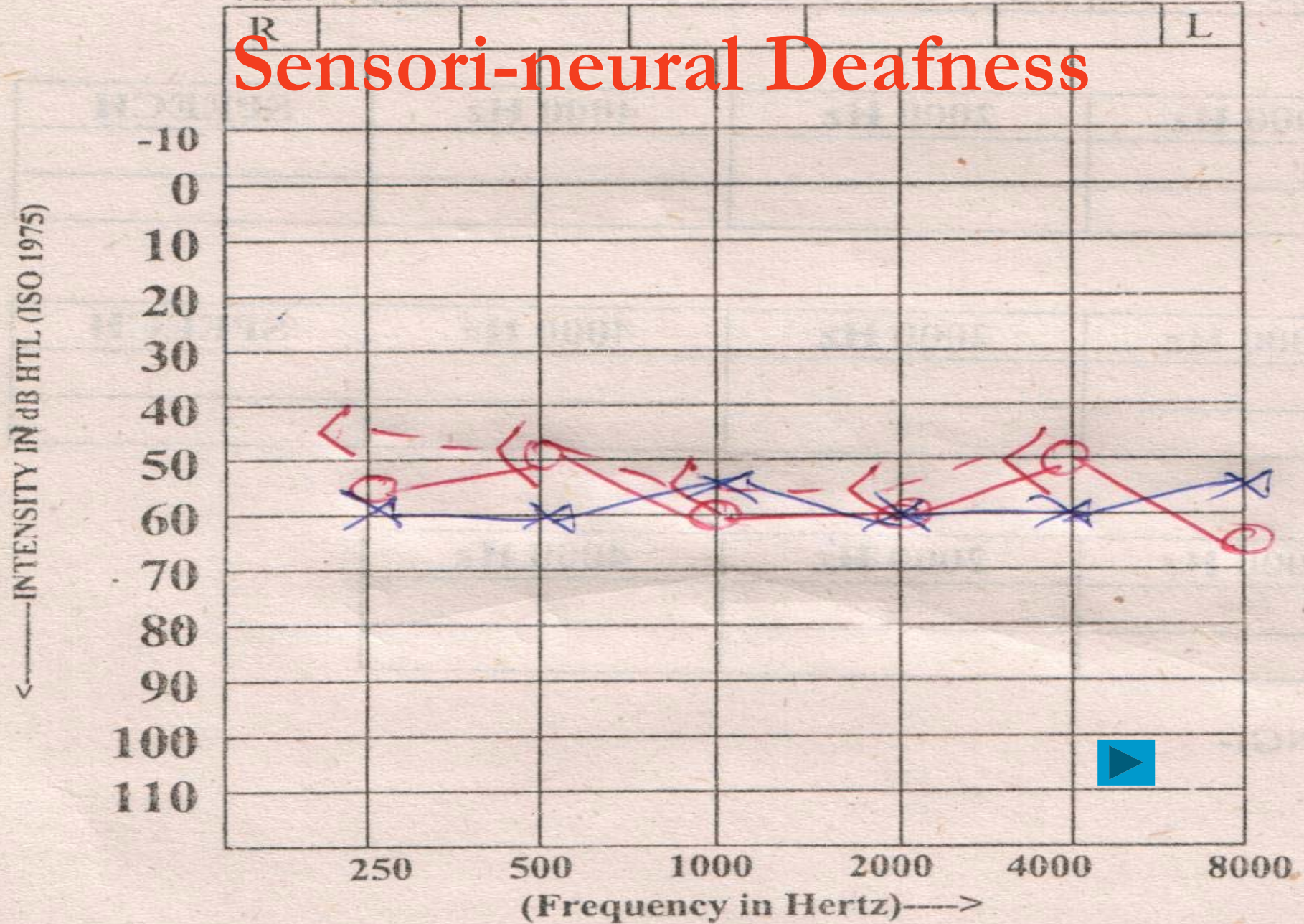
← INTENSITY IN dB HTL (ISO 1975)

-10
0
10
20
30
40
50
60
70
80
90
100
110



Audiometric Weber

Sensori-neural Deafness

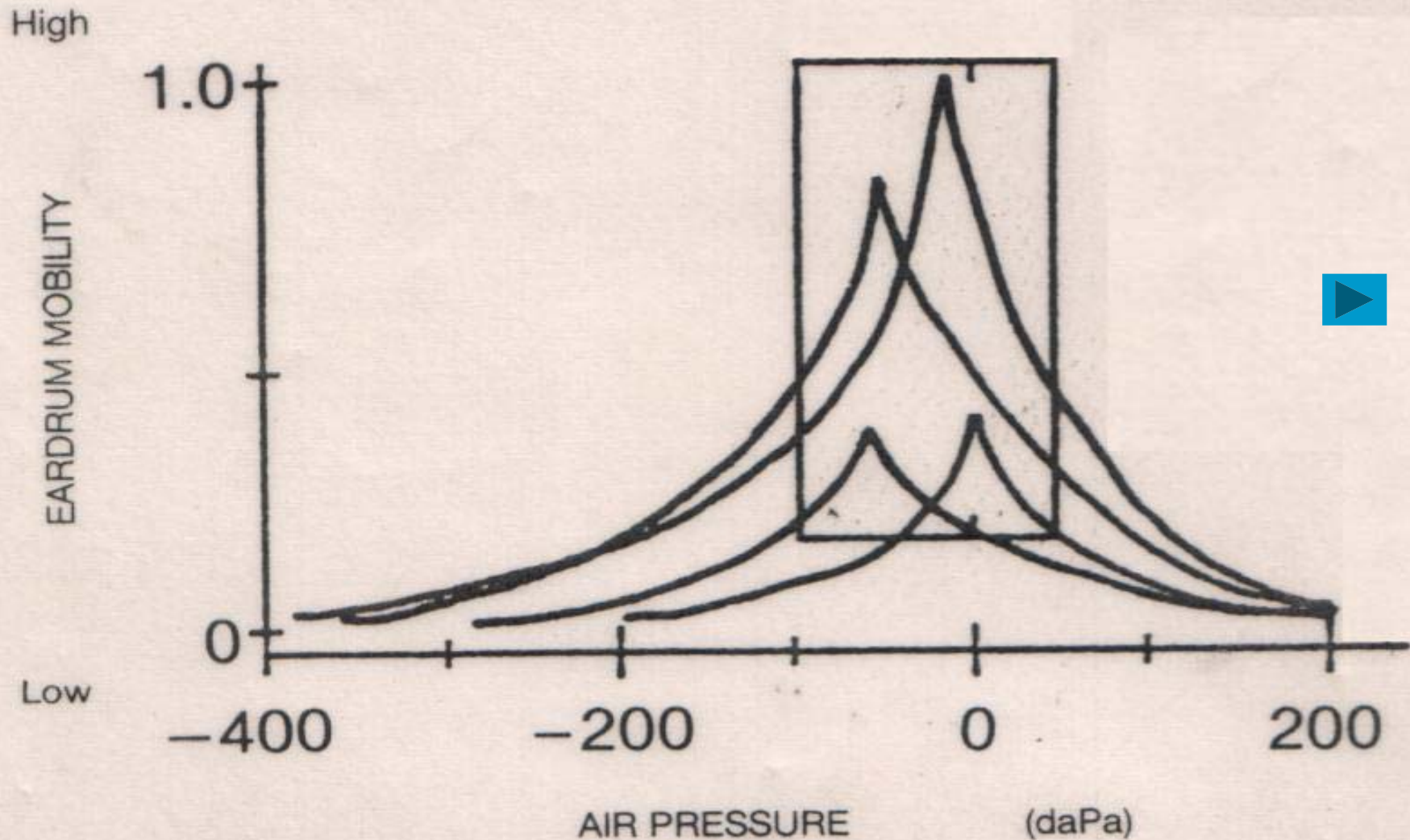


Impedance Audiometry

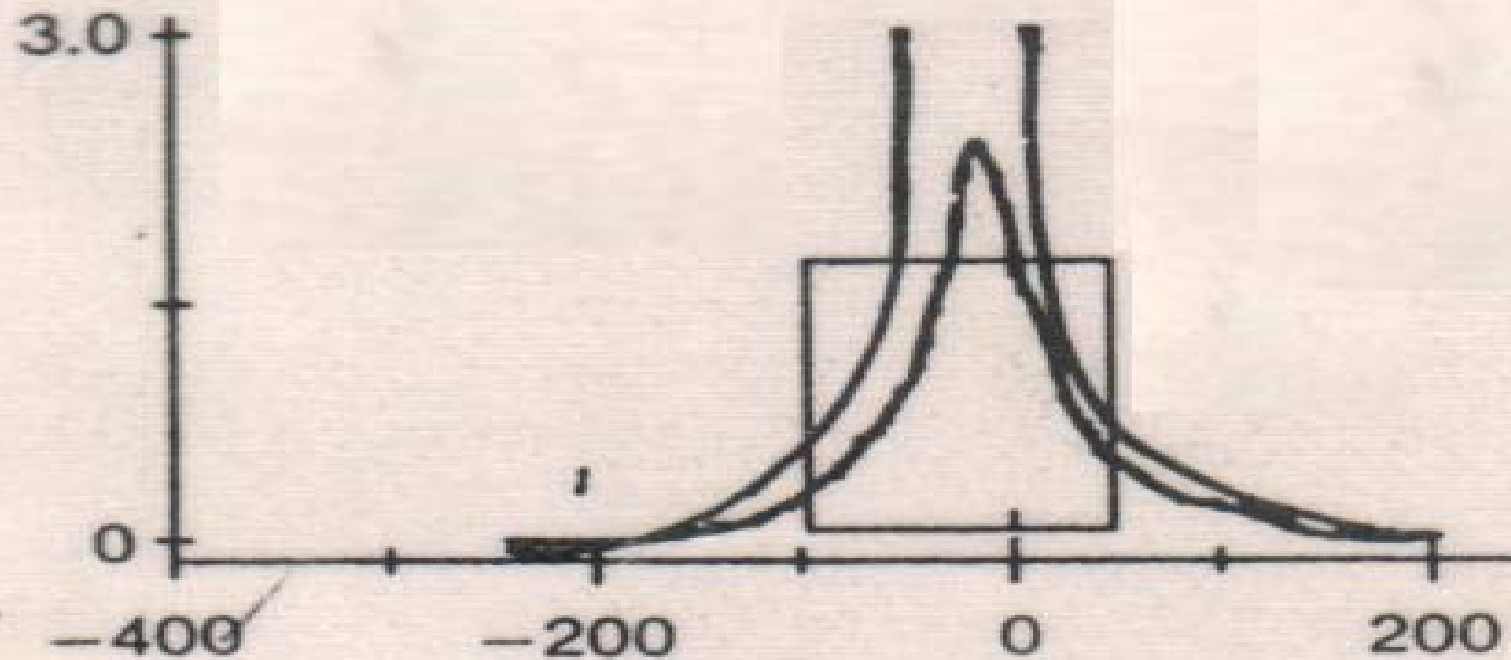
- Helps to diff. from other causes of conductive loss
- Type As curve
- Type “B” curve in SOM
- Type “C” In E. T. catarrh
- Type “Ad” in Ossicular discontinuity



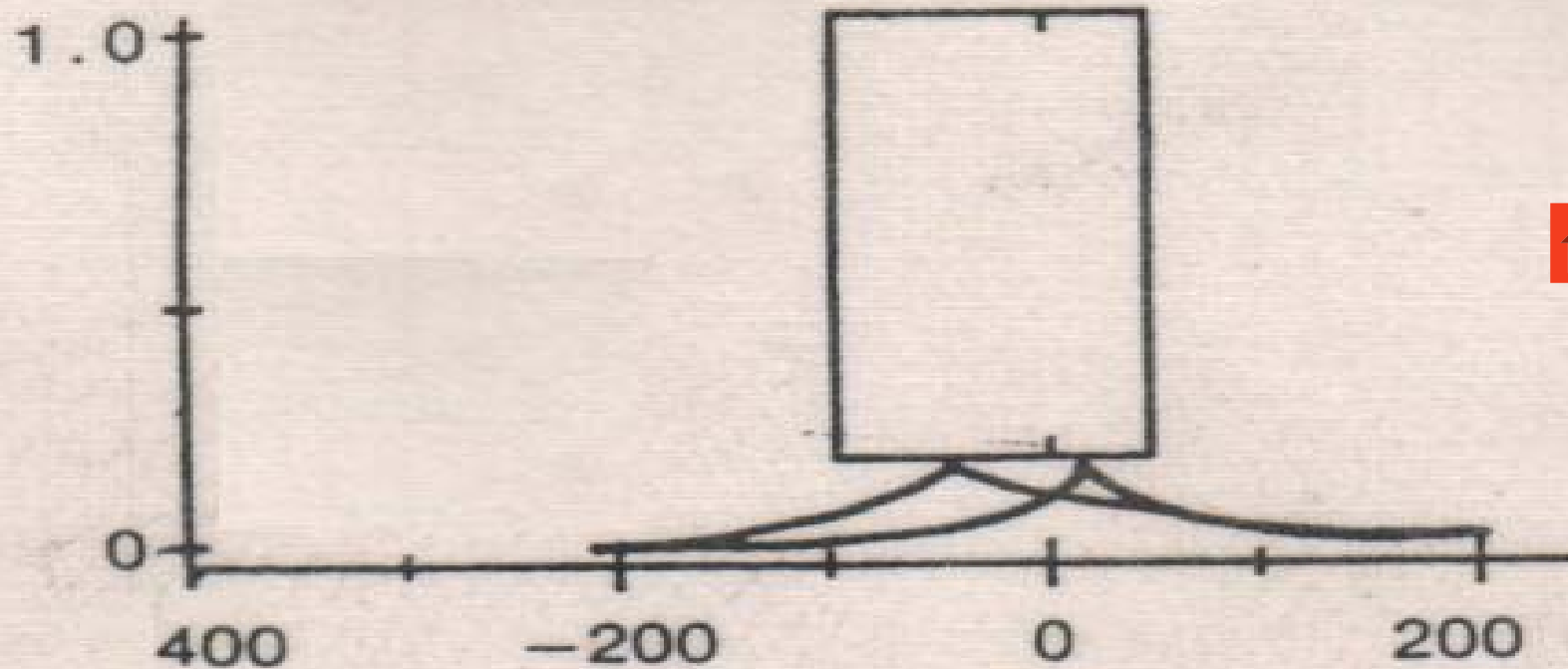
Normal Impedance



Ossicular Discontinuity



“As” Curve



Differential Diagnosis

- Otitis media with effusion
- Ossicular discontinuity
- Adhesive otitis media
- Cong. Footplate fixation
- Tympanosclerosis
- Cong. Cholesteatoma
- CSOM
- Vender Hoeve syndrome



Treatment

- Medical treatment
- Surgical treatment
- Hearing rehabilitation

Medical Treatment

- Sodium fluoride
 - 50mg-75 mg daily x 2 yrs
- Decreases osteoclastic activity
- Increases osteoblastic bone formation



Indications

- Positive Schwartz sign
- Progressive SN loss with surgically confirmed otosclerosis
- SN loss with positive family history
- Positive Radiological Evidence

Contra indication

- Chronic Nephritis
- Rheumatoid arthritis
- Pregnant & lactating mother
- Age < 18 yrs
- Allergy to Sod. Fluoride
- Skeltal flourosis
- Peptic ulcer



Surgical Treatment

- Fenestration
- Stapes mobilisation
- Stapedectomy
- Stapedotomy



Criteria for Stapedectomy

- Conductive loss not < 30 db
- Good cochlear reserve
- Good speech discrimination
- Conductive loss not > 60 db



Indications for Stapedectomy

- Otosclerosis
- Tympanosclerosis
- Paget's disease
- Congenital foot plate fixation

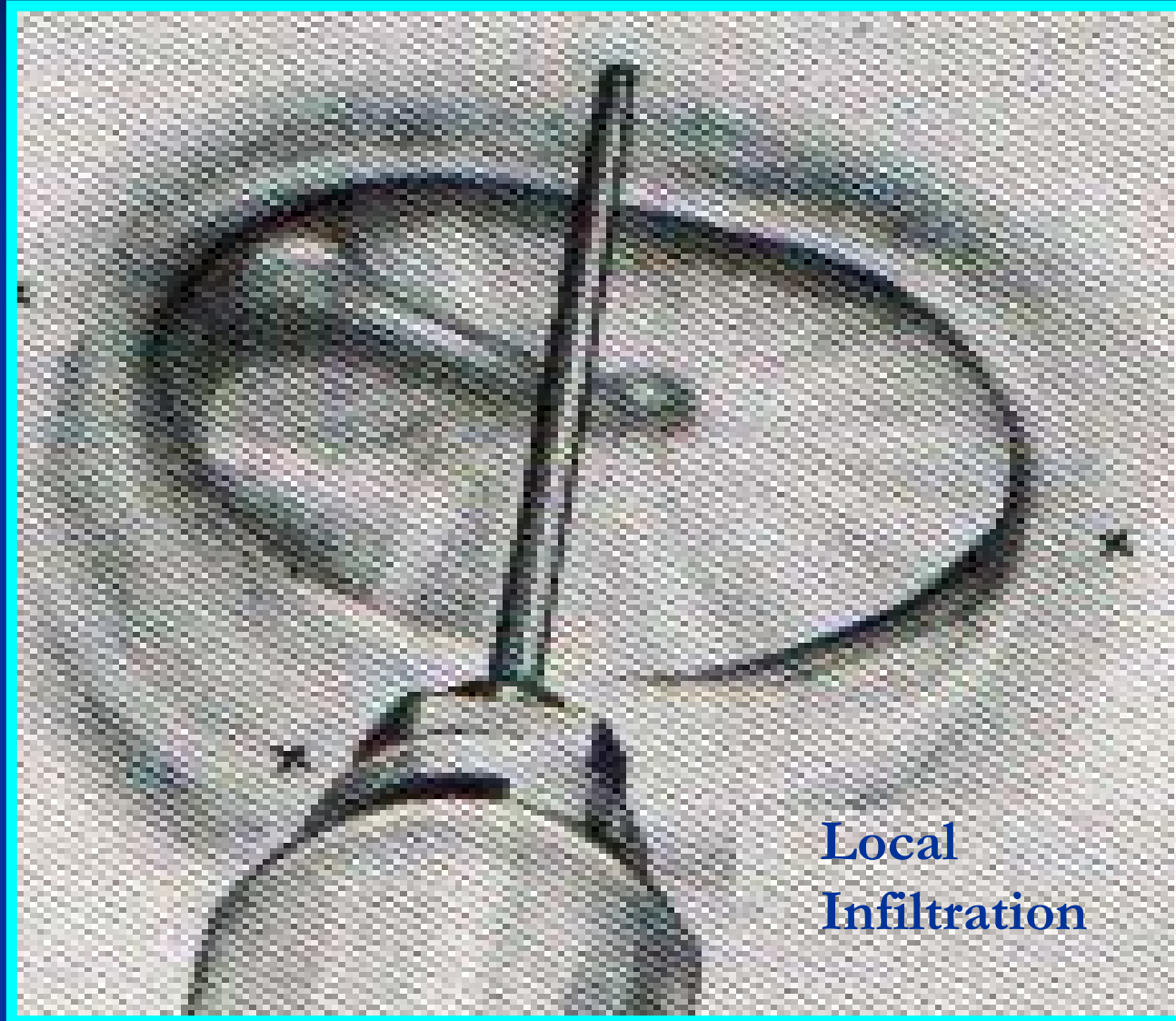


Contra indications

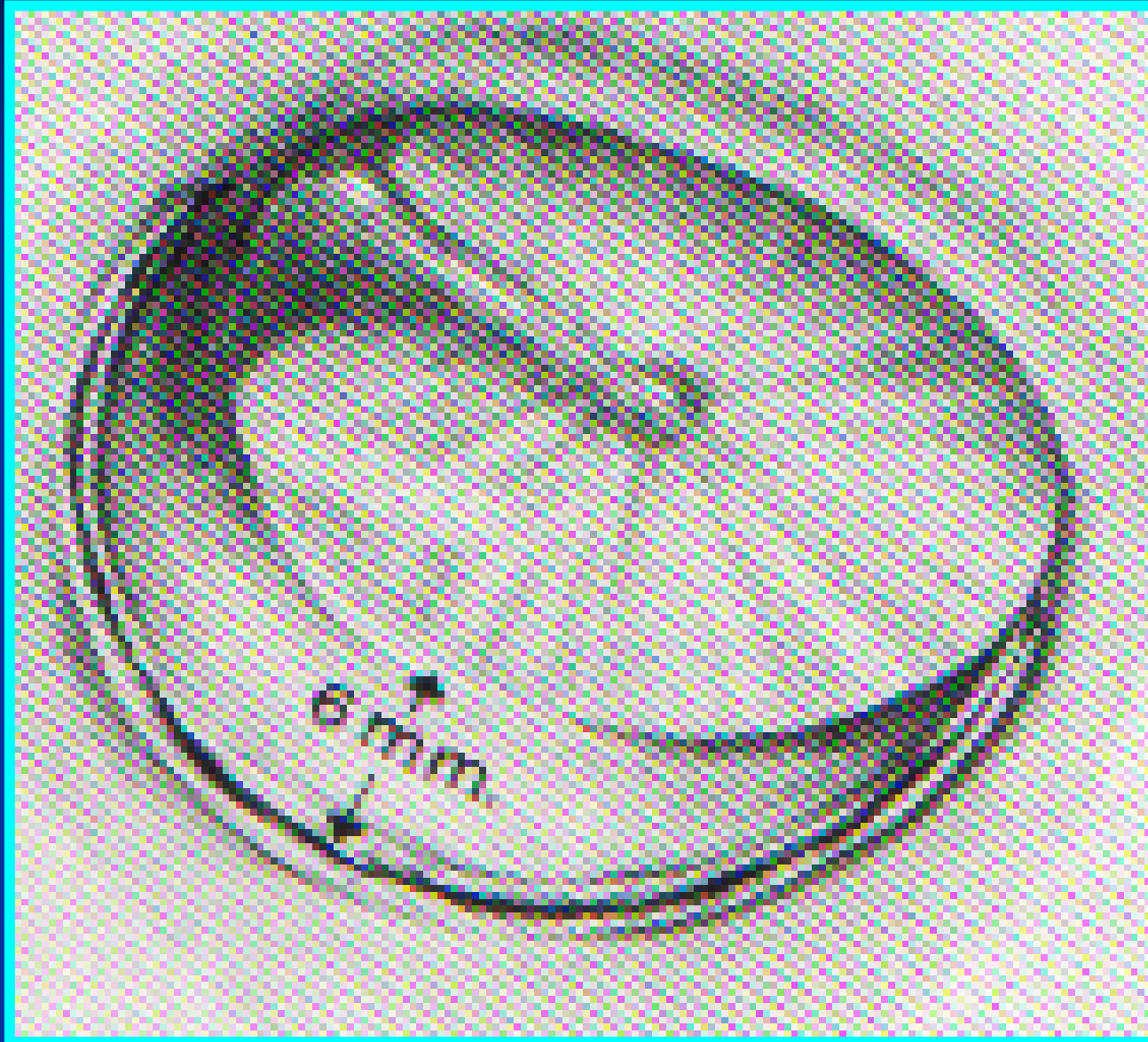
- Active disease
- Pregnancy
- Poor cochlear reserve
- Only hearing ear
- General medical disease
- Vertigo



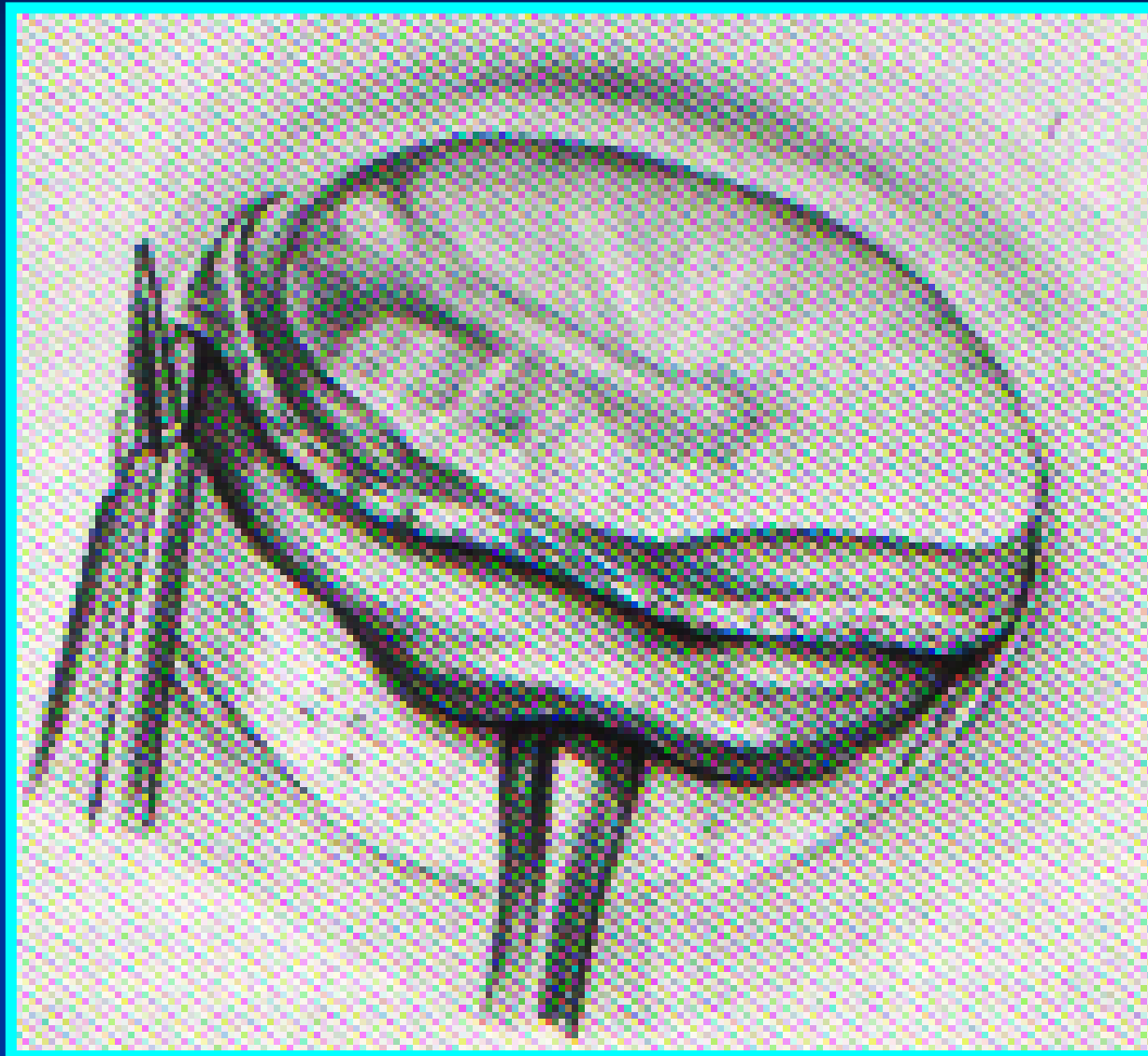
Procedure



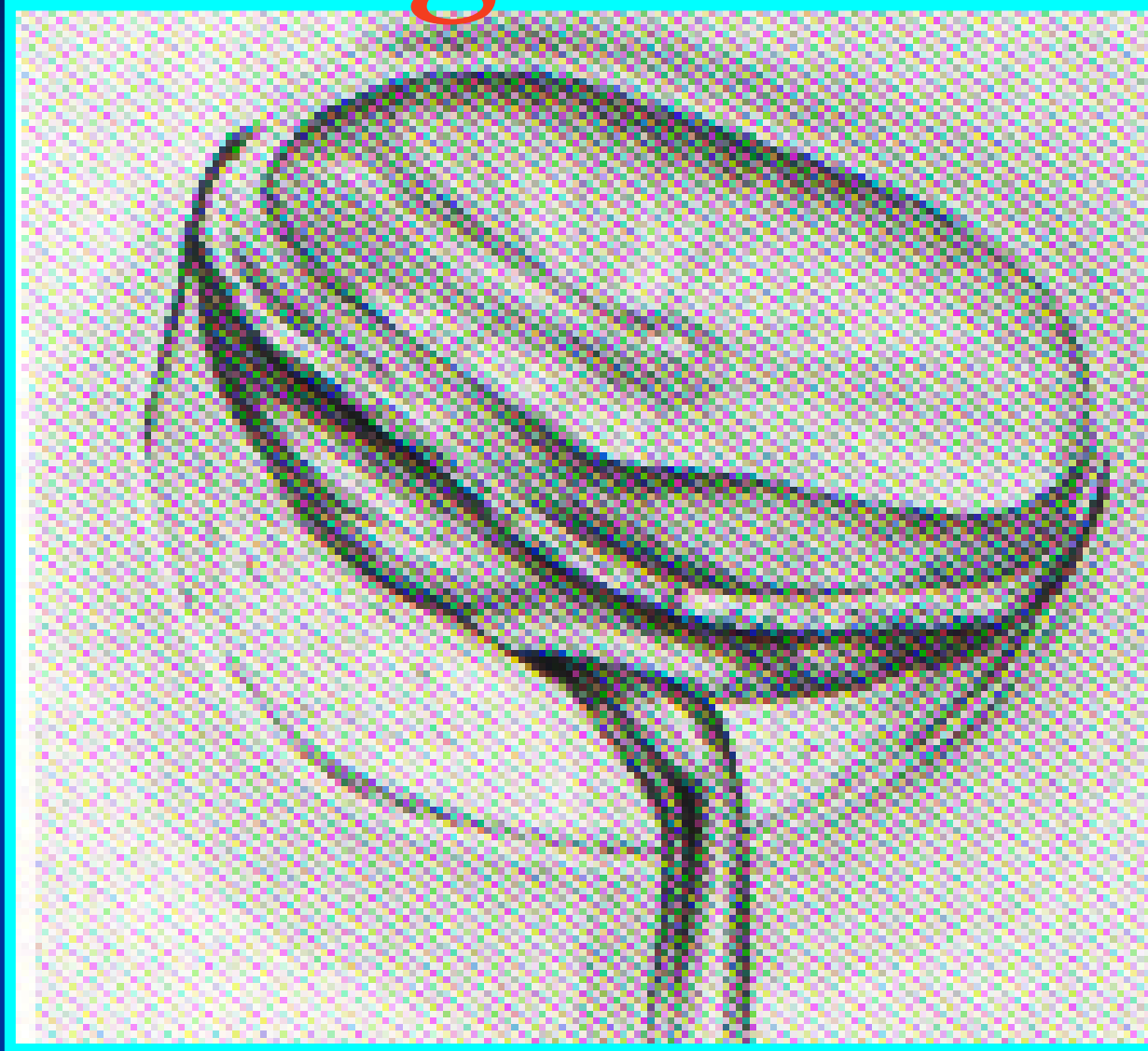
INCISION



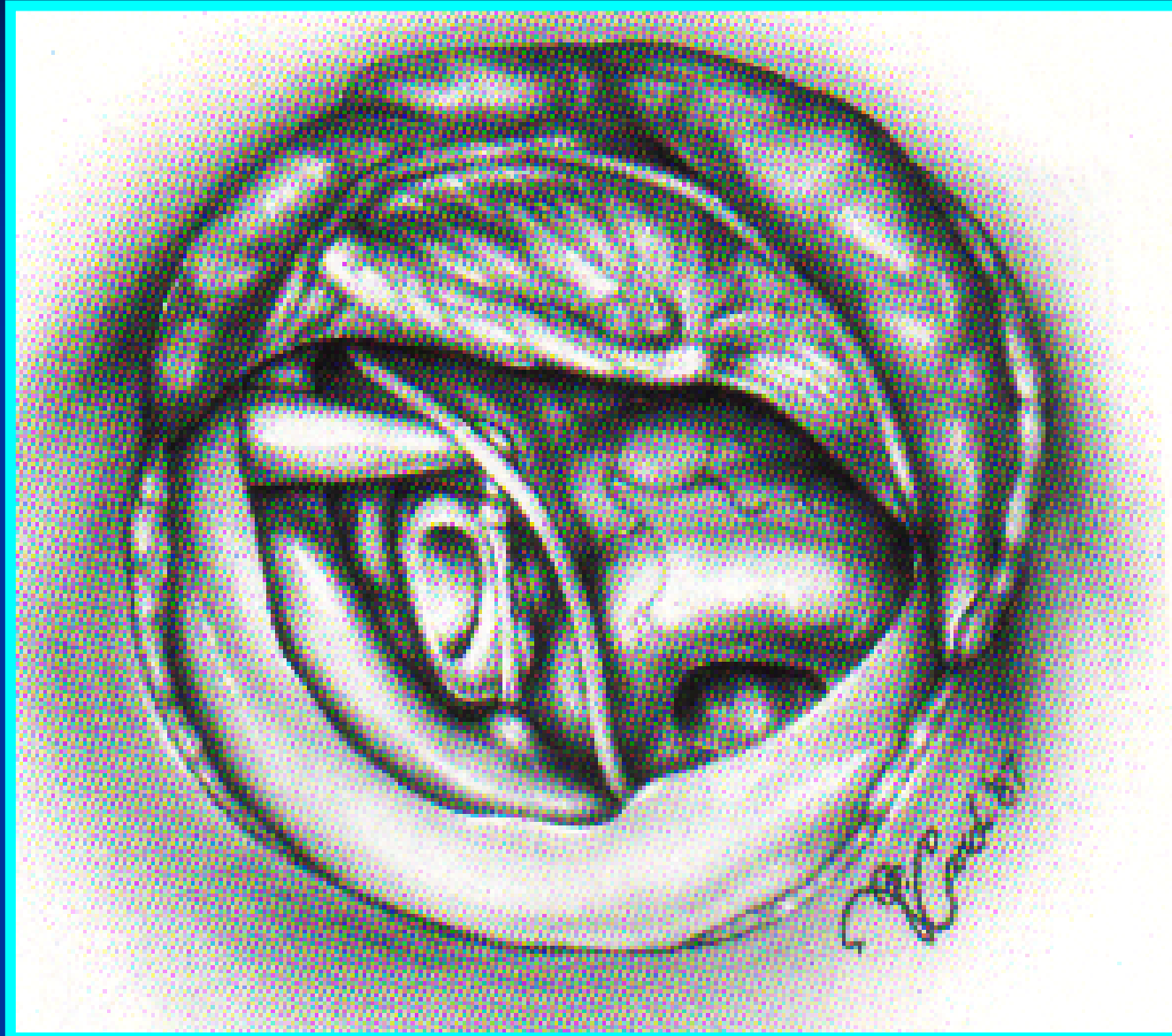
Flap elevation

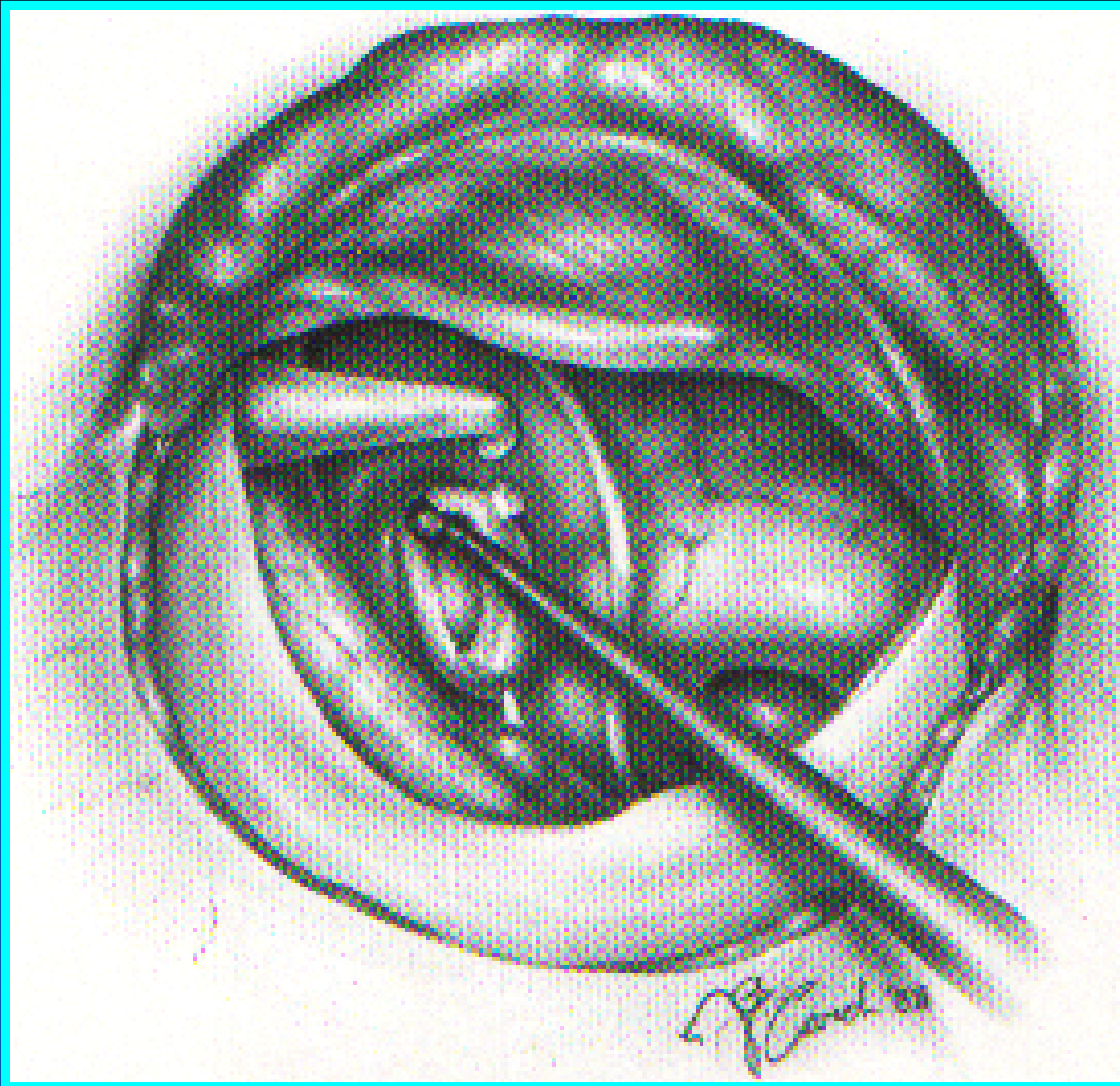


Lifting Annulus

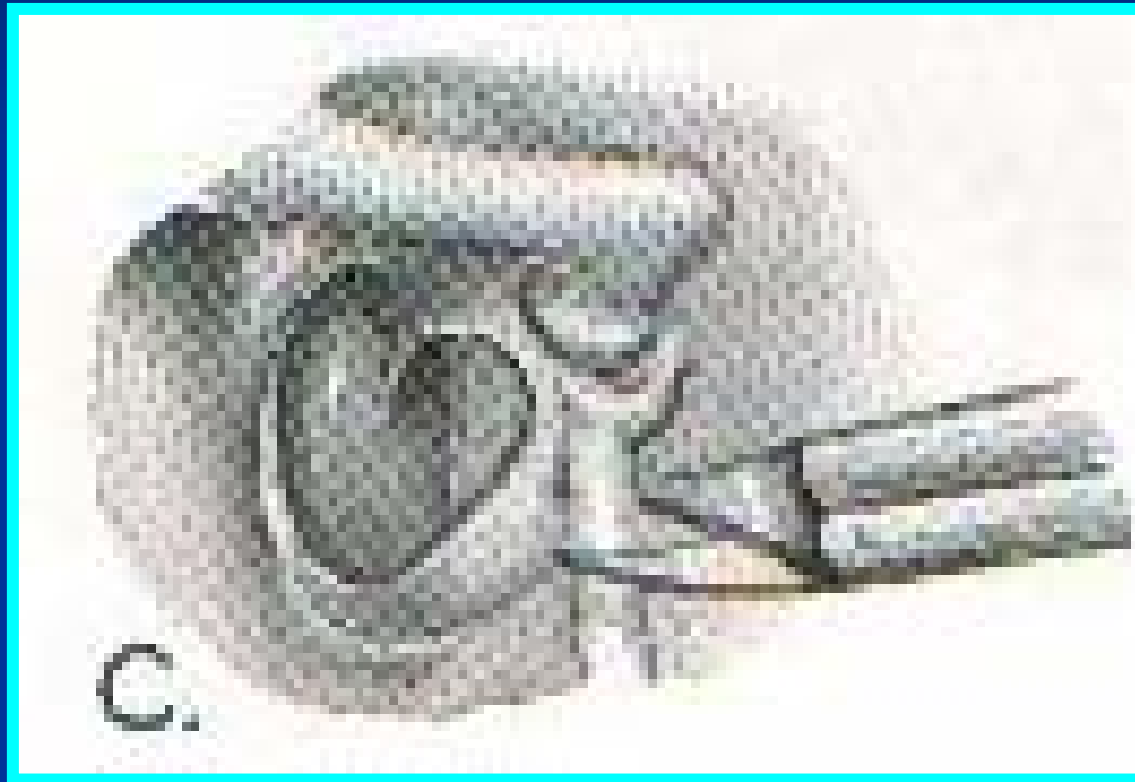


Exposure of Stapes



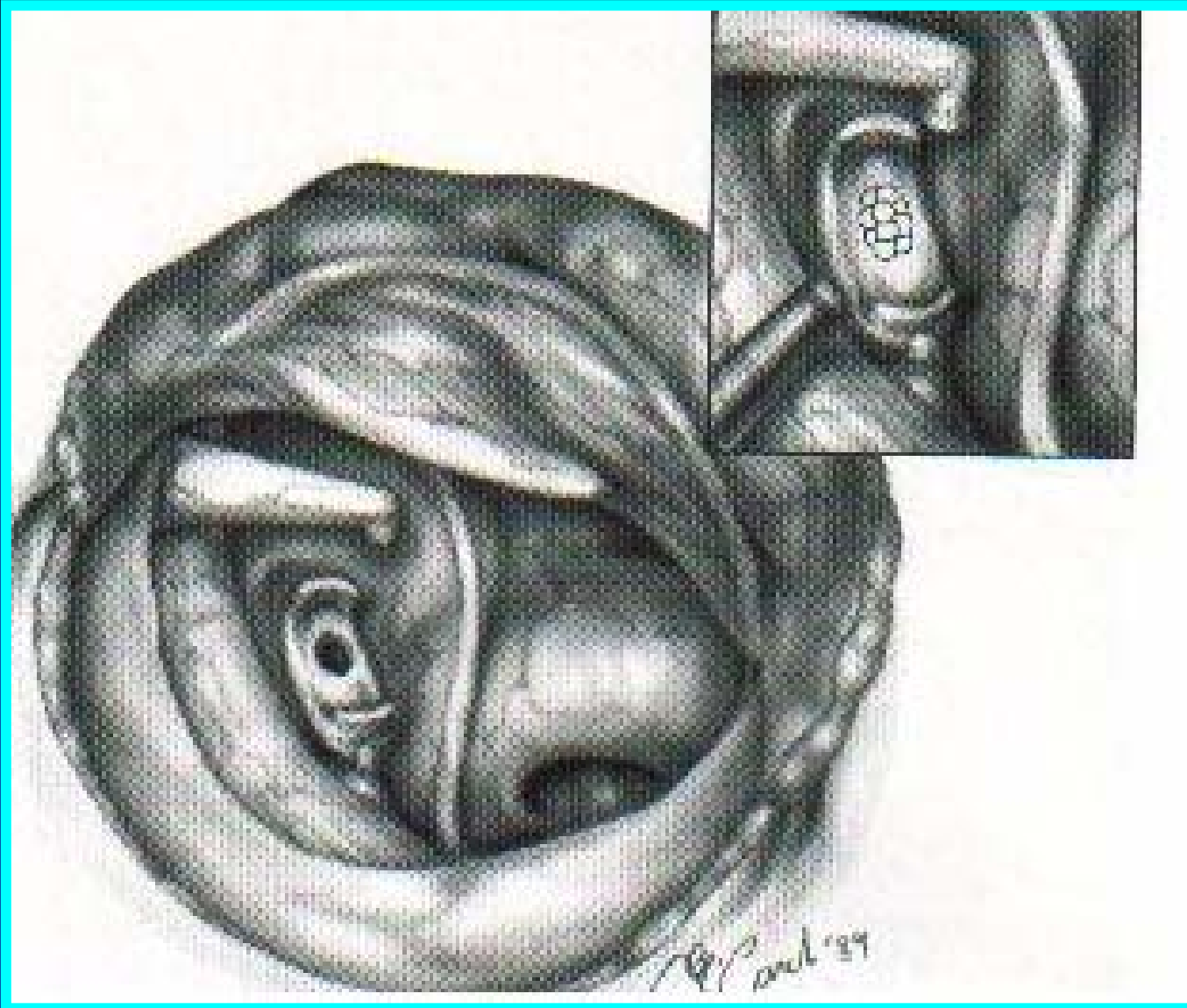


Stapedial Tenotomy



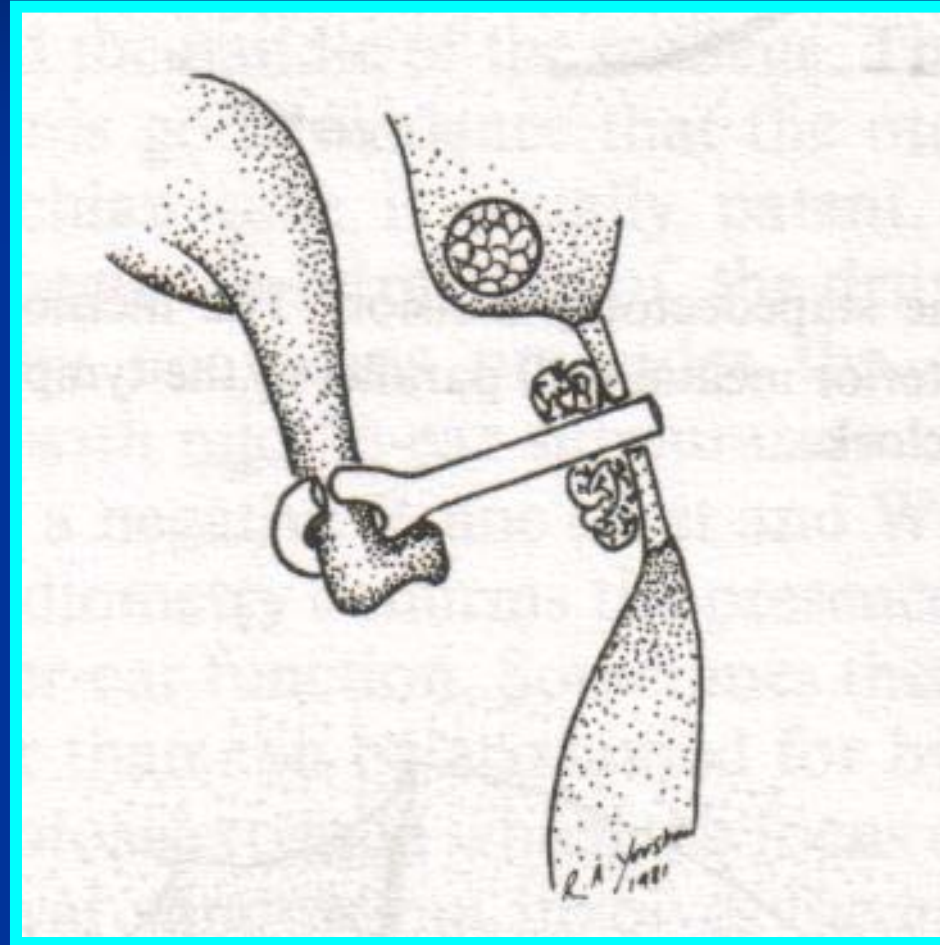
Supra structure Removal





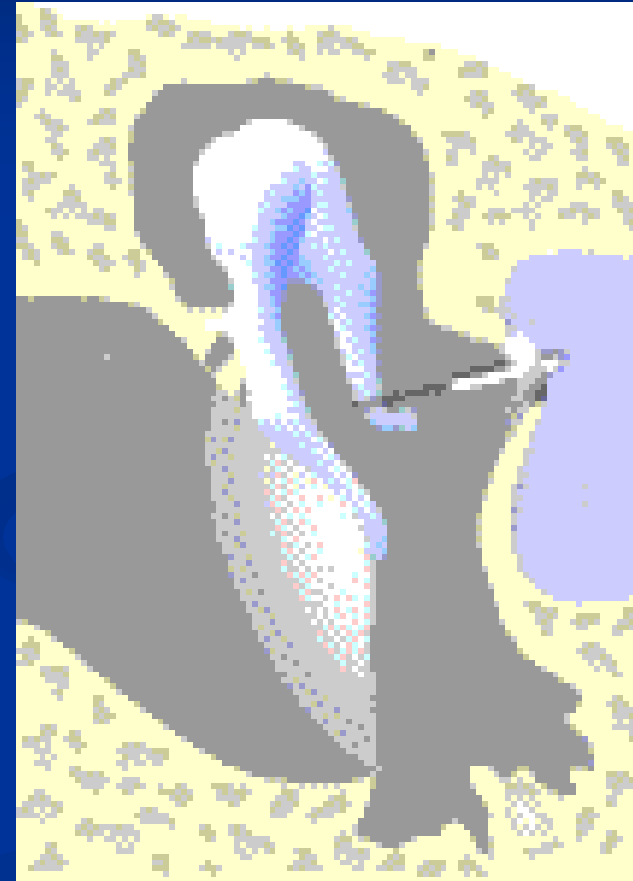
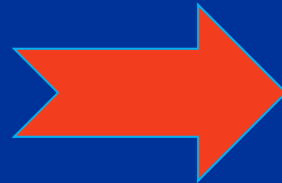


Piston in Place



Stapedotomy

Sound Conduction After Surgery

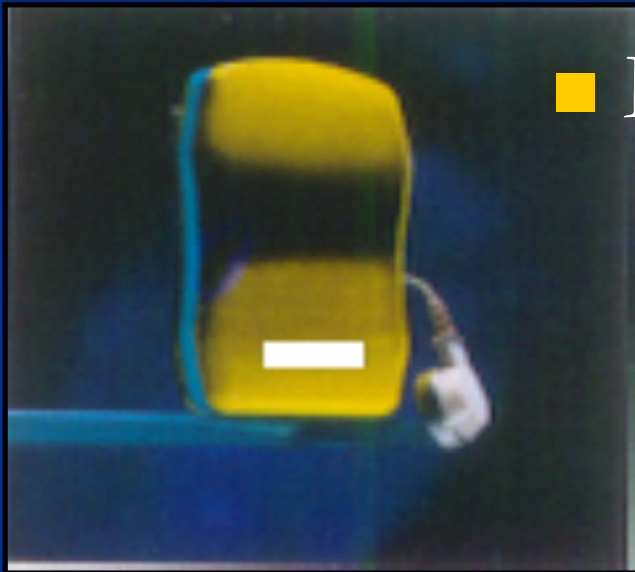


Post op Advise

- Not to blow nose forcefully
- Not to sneeze with closed mouth
- Avoid loud noises
- Not to climb mountains, Not to board non pressurized aircraft.
- Report to Surgeon for Vertigo/Decreased hearing
- Diving when swimming
- Lifting heavy weights



Hearing rehabilitation



- Hearing Aids
 - Pocket Model
 - BTE
 - ITC

