Otosclerosis

- Introduction
- Aetiology
- Pathology
- Clinical Picture
- Examination
- Audiolological 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
Annular 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 Von-der Hoeve 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
Mixed Deafness
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

![Graph showing air pressure vs. ear drum mobility]
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 flouride
  - 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 fluoroosis
- Peptic ulcer
Surgical Treatment

- Fenestration
- Stapes mobilisation
- Stapedectomy
- Stapedotomy
Criteria for Stapedectomy

- Conductive loss not < 30db
- 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

Local Infiltration
INCISION
Flap elevation
Lifting Annulus
Exposure of Stapes
Stapedial Tenotomy
Supra structure Removal

Stapes superstructure
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