Trauma

• **Definition:**
  an injury to living tissue caused by an extrinsic agent

• **Classifications:**
  • Physical injury
  • Thermal injury
  • Acoustic injury
Auricular Trauma

- **Sharp**
  - Laceration
    - Clearing & debridement
      (minimize debride – only complete non vital)
    - Suture (3 layers)
    - Prophylactic AB

Attention to either side of each auricle
Auricular Trauma

- **Sharp**
  - Laceration
  - Avulsion

Refer to ENT center
Auricular Trauma

• **Sharp**
  – Laceration
  – Avulsion

• **Blunt**
  – Hematoma
    • Shearing of skin & perichondrium from cartilage
    • Fluctuant & tender
    • No findings of infection
Auricular Trauma

• **Sharp**
  – Laceration
  – Avulsion

• **Blunt**
  – Hematoma
    • Prompt needle aspiration or incision and drainage
    • Application of a splint or bolster (within 2 wks)
      (bolster: at least 5 d)
    • Tab Ciprofloxacin

Trauma
• Physical

Otologic Emergencies
Auricular Trauma

• **Sharp**
  – Laceration
  – Avulsion

• **Blunt**
  – Hematoma
    • Sequela → cauliflower ear
Ear Canal Trauma

- Penetrating
  - The Facial Nerve
    injured at the stylomastoid foramen

Refer to ENT center
Ear Canal Trauma

- Penetrating

- Blunt
  - most often caused by the insertion of a *foreign object*
Ear Canal Trauma

- Penetrating

- Blunt
  - most often caused by the insertion of a foreign object
  - Mandibular injuries
Ear Canal Trauma

- **Penetrating**
- **Blunt**
  - Goal of treatment: prevention of *Stenosis*
  - Mild abrasion → Otic Drop
  - Severe abrasion → Stent
  - Bone displacement → Surgery
Tympanic Membrane Trauma

- **Penetrating**
  - Usually posterior

- **Blunt**
  - anterior and inferior

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- **Etiology**
  - Assault
  - Diving
  - Explosion
  - Acoustic
Tympanic Membrane Trauma

- **Penetrating**
  - Usually posterior

- **Blunt**
  - anterior and inferior

- **Management**
  - Water protection
  - Spontaneous healing (probably 90%)
Temporal Bone Trauma

- Old classification
  - Longitudinal or Transverse Fx
Temporal Bone Trauma

- **Old classification**
  - Longitudinal *or* Transverse Fx

- **New classification**
  - Otic capsule sparing *or* Involving Fx
Temporal Bone Trauma

- Important complications:
  - Facial palsy
  - Hearing loss
  - CSF otorrhea

Refer to ENT center
Burning

- Head & Neck: 9% of body surface area
  but

  *the most common sites of thermal injury*

- Ears: involve in >90% of head & neck burns
**Management:**

1. Control of the airway and circulation
2. Determination of extent and depth of injury
3. Fluid resuscitation (Parkland protocol)
4. Tetanus prophylaxis
5. Wound care and observation
6. Topical antibiotics
   - *No* routine systemic antibiotics
   - *No* pressure is applied to the ears
Frostbite

- Commonly occur on head & neck
  most often involving ears, cheeks, and nose

- Bring to warm environment as soon as possible
- Local rewarming by immersing in a bath (38-42°C)
- Narcotic analgesia (rewarming can be painful)
- Antithromboxane agents (reduce ischemia)

Surgical debridement is delayed (several weeks)
**Acoustic Trauma**

- **Definition:**
  
  injury to **hearing** mechanisms in the **inner ear** due to very **loud noise**

  - Hearing loss (sensorineural)
  - Tinnitus

- **Management:**

  - Prevention
  - Observation
Foreign Body

- Types:
  - Insects & ...
  - Beans
  - Coin Battery
  - Other hard objects
  - Soft objects
Foreign Body

- **Removal** is under *controlled position* with *proper instrument*.

Wrong method  right method
Acute Hearing Loss

- The most common cause: cerumen impaction

Normal  SNHL  CHL
Sudden SNHL

• Definition:
  - SNHL in 3 consequent frequencies
  - ≥ 30 dB
  - in ≤ 12 Hrs

it is Syndrome, not Diagnosis

Natural History
  - 10 in 100,000 in year
  - Most common on awakening
  - Most common is unilateral
  - Male = Female
  - Most recovery within 2 weeks
  - 1/3 – 2/3 recovered W/O Rx

Natural History
Needs Work up
Sudden SNHL

Management:

- Trauma
- Physical
- Thermal
- Acoustic
- Foreign Body
- Hearing Loss

Work up:

- PTA-SRT-SDS
- Tympanometry
- Acoustic reflex
- CBC-diff
- ESR
- FTA-ABS
- HIV Ab
- CPA MRI

Treatment:

- Etiology management
- Steroid (1 mg/kg) [10 days]
- Acyclovir
- Low salt diet with thiazide diuretics
- Improve blood flow or oxygenation

It is Syndrome, not Diagnosis
Normal Vestibular Function

- Bilateral input to vestibular center
- with Activation of each vestibule body & eyes are pushed away from
- Cerebellum compensates vestibular injury
  - In fluctuating states, it can not compensates
  - In slowly progressive states, occurs near complete

Trauma
- Physical
- Thermal
- Acoustic

Foreign Body

Hearing Loss

Vertigo
## Differential Diagnosis

### Otologic Emergencies

- **Trauma**
  - Physical
  - Thermal
  - Acoustic

- **Foreign Body**

- **Hearing Loss**

- **Vertigo**

<table>
<thead>
<tr>
<th>Duration</th>
<th>without Hearing Loss</th>
<th>with Hearing loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>seconds</td>
<td>BPPV</td>
<td>Perilymph. fistula</td>
</tr>
<tr>
<td>minutes</td>
<td>Vertebrobasilar/Migraine</td>
<td></td>
</tr>
<tr>
<td>hours</td>
<td>Vestibulopathy</td>
<td>Meniere</td>
</tr>
<tr>
<td>days</td>
<td><strong>Vestibular Neuritis</strong></td>
<td>Labyrinthitis</td>
</tr>
<tr>
<td>weeks</td>
<td>CNS disorders</td>
<td>Acoustic Neuroma</td>
</tr>
</tbody>
</table>

The most commons are highlight
Management

- Symptomatic
  - Bed Rest
  - Anti-vertiginous
  - Anti-emetic
  - Vestibular Rehabilitation

- Neurologic Evaluation (in suspicious)
Bell’s Palsy

**Diagnostic Criteria:**
- paralysis or paresis of all muscles of one side of face
- sudden onset
- absence of signs of CNS disease
- absence of signs of ear or C.P. angle disease

**20 in 100000**

**Diagnosis of exclusion**

**The most common cause**
Bell’s Palsy

Management:
- Spontaneous recovery
- Complete recovery in 80-90%

- Steroid (1 mg/kg prednisolone)
- Acyclovir
- Surgery: very controversial

Prognostics:
- Complete paralysis
- Old age
- Hyperacusis
- Diabetes Mellitus
- HTN
- Facial pain
Otalgia

- **Inflammatory** (including infections)
- **Neuralgia**
- **Referred**
  - Pharyngeal evaluation
  - TMJ evaluation
Auricular Perichondritis

**Signs:**
- Warm
- Red
- Swollen
- Tender

**Microbiology:**
- Pseudomonas aeruginosa
- Staphylococcus aureus

**Management:**
- Aggressive IV antibiotics
- Drainage in fluctuation (chondritis)
Acute Otitis Externa

**Findings:**
- Pain Pain Pain Pain Pain Pain ........
- Otorrhea
- Canal stenosis (edematous canal)

**Management**
- Aural toilet
- Topical Medications
  - Antibiotic
  - Anti-inflammatory
  - Acidic
- Analgesic

*Systemic antibiotics haven’t routine indications*
Thanks for your attention