



EAR, NOSE AND THROAT

Trauma and Foreign Bodies - OSCE

Leader: Maha Allhaidan

**Done by: Shahad Alawad, Bayan AlAmr,
Maha Allhaidan & Ghadah Alharbi**

**Revised by: Maha Allhaidan, Lama Alotaibi,
& Hind Almuhaya**

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Ear Trauma

Ear Trauma can be divided into external (auricular), middle or inner ear trauma

History Taking:

Personal Data

Name
Age
Marital status
Occupation

General questions about the trauma

How? (Mechanism of injury)	Penetrating injury (bullet, knife) Burn injury Cold injury (frostbite) Hazardous environment (NIHL, barotrauma) Fight, animal bite, ear piercing, or foreign body insertion (traumatic perforation)
When? (Onset)	
What did you do immediately?	
History of head trauma?	Skull base fracture
Associated symptoms of head injury	e.g. altered mental status, vomiting, headache

Specific questions for Auricular Trauma

Bleeding?	
Any wound contamination?	e.g. clean laceration from table edge with low risk of contamination vs. animal bite wound with high risk of bacterial contamination and need for special prophylaxis
Rabies vaccine? Tetanus immunization status?	
Medical history	e.g. diabetes mellitus, cancer, prior keloid formation
Medication use	e.g. immunosuppressive agents
Allergies	Especially local anesthetics
Social history	- Habits (e.g. tobacco use) that may negatively affect healing and increase the risk for a poor outcome - Residency (Cold countries = frostbite)

Specific questions for Middle Ear Trauma

Ear pain	<p>To differentiate between <u>traumatic perforation of tympanic membrane</u> from <u>chronic infection Perforation</u>:</p> <p>Onset, pain, hearing loss, vertigo all present in acute stage.</p> <p>While chronic maybe present with history of discharge.</p> <p>- Pain & hearing is affected (Hemotympanum)</p>
Hearing loss	
Nausea and vomiting	
Facial weakness	
Vertigo	
Imbalance	
New onset otorrhea or clear, particularly unilateral, rhinorrhea	Worse with straining (Valsalva) or positioning of the head in a dependent position

Specific questions for Inner Ear Trauma

Tinnitus	
Difficulty in hearing	
Vertigo (feel like the room is spinning)	
Dizziness (lightheaded)	
Encounter extremely loud sounds without proper equipment?	If yes, do you use protective earplug? How long exposure?
Occupation	NIHL
Hobbies or recent activities	Scuba diving/ Military airplane = Barotrauma

Nasal Trauma

Nasal bones are the most common broken bone on the head.

Can be divided into two categories:

- 1) **External Nasal Trauma:** like motor vehicle accidents, child abuse, physical assaults, sports injuries and falls.
- 2) **Internal Nasal Trauma:** like infections from nasal piercings, foreign bodies, sniffing cocaine, picking and scratching and inhaling irritant substances.

Fast diagnosis and management should be carried out in case of two scenarios to prevent cartilage necrosis and saddle nose deformity:

- If patient presented with unilateral nasal block and foul smelling discharge think about foreign body lodged in the nose especially in preschool children. (Rx: remove foreign body)
- In case of bilateral nasal block and recent history of nasal injury rule out hematoma or abscess formation. (Rx: incision and drainage then apply penrose drain and doyle nasal splint)

Signs:

- Nasal swelling
- Epistaxis or discharge or CSF leakage
- Bruising around the eyes

Diagnosis:

- Clinical examination (If there was edema and swelling re-examine the patient in 3-4 days for children and one week for adults to check for any septal deviation)
- CT scan to see extent of injury and if there is injury to surrounding tissue

Treatment:

Depends on type of trauma

- 1) **Incase of bleeding:** If it's more than 20 minutes or very frequently occurs:
 - Cauterize using silver nitrates to the bleeding vessel
 - Packing
- 2) **Medications:**
 - Antibiotics maybe required to prevent infection
 - Painkillers

- 3) Nasal bone reduction and external splint placement within 10 days in pediatrics or two weeks in adults. We wait until edema is reduced and patients are asked to apply ice packs and sleep with head raised up.
- 4) If bones healed or fracture was complicated or there is a hematoma Septorhinopalsty needs to be done (for children after the age of 18).
- 5) In case of foreign body lodged in nostrils removal of foreign body should be done.

History Taking:

Personal Data

- Name
- Age
- Occupation

Chief Complain

History Of Presenting Illness

- Mechanism of trauma (How did it happen?)
- Onset (When did it happen?)
- Side of trauma (frontal or from the sides and think about other associated injuries)
- Ask about other injuries or complains
- Ask about pain
- Ask about blood or discharge (If present ask about smell, color of discharge and amount)
- Ask about loss of smelling
- Ask about difficulty breathing and nasal obstruction
- Ask what did the patient do to his/her injury
- Ask about previous nasal fractures, traumas and surgeries
- Ask about recent history of nasal piercing if applicable

Past Surgical History and Anesthesia complications

Past Medical History

Drug History & Allergies

Social History (Smoking and drug abuse “cocaine”)

Constitutional Symptoms

Laryngeal Trauma

Mechanism of injury:

- 1. Blunt:** Motor Vehicle Accident, road traffic accident, strangulation (suicide), clothesline, sports related.
- 2. Penetrating:** Gunshot wounds, Knife.
- 3. Iatrogenic laryngotracheal injuries**
- 4. Flames or hot vapours and swallowed corrosives.**

Physical exam:

- 1- Stridor: Noisy breathing
- 2- Hoarseness
- 3- Subcutaneous emphysema:
- 4- Laryngeal tenderness, ecchymosis, edema.
- 5- Hemoptysis
- 6- Loss of thyroid cartilage prominence.
- 7- Major blood vessel or nerve injury. Especially in gunshot wounds.
- 8- Associated injuries - vascular, cervical spine, esophageal.

Investigations:

- 1. Flexible Fiberoptic Laryngoscope:** Perform in emergency room and its findings dictate next step.
2. CT scan.
3. Endoscopic or external surgical exploration.
4. Other studies include angiography, cervical spine radiograph and barium esophagram swallow depend on the case itself.

Management: you have to always secure the airway as *an initial step*.

Start with ABC

Airway management: Laryngo-tracheal tube or **tracheostomy**.

If inhalational injury, ventilate the patient.

Medical management: We might give epinephrine, steam inhalation to decrease congestion, and steroids to decrease the inflammation

Surgical management

History taking:

Personal Data

- Name
- Age
- Occupation

Chief Complain

- How? (Mechanism of injury)
- When?

Ask about the following:

- **Change in voice**
- Difficulty swallowing
- Difficulty in speaking
- Pain with swallowing or talking
- Pain with tongue movement
- Pain with coughing
- Cough productive of blood
- Difficulty breathing (dyspnea)
- Anterior neck pain

Past Surgical History and Anesthesia complications

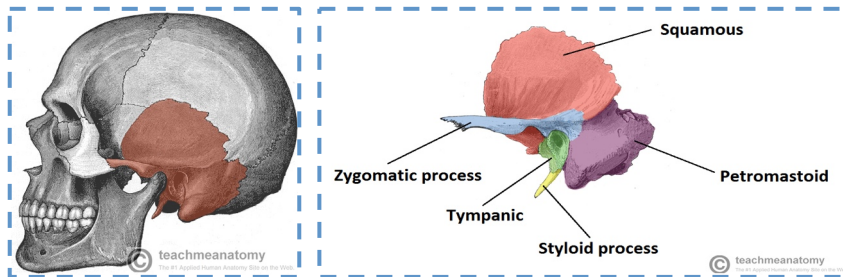
Past Medical History

Drug History & Allergies

Social History

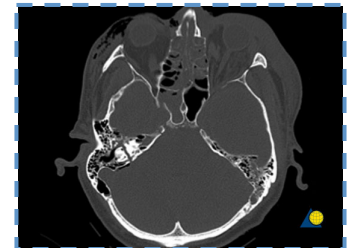
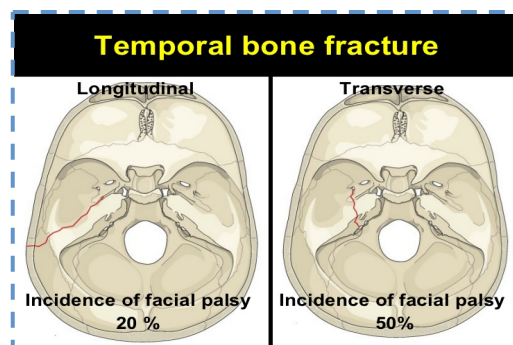
Temporal Bone Fracture

Temporal bone is one of the most complex bones in the body located at the base of the skull. It houses many vital structures including the cochlear and vestibular end organs, **the facial nerve, the carotid artery, and the jugular vein**. Temporal bone fracture is associated with trauma to other cranial nerves, e.g. VI “abducens”, IX “glossopharyngeal”, X “vagus”, and XI “spinal accessory”.



Temporal bone fractures can be longitudinal or transverse. **Longitudinal temporal bone fracture is the common one “75-80%”**. Classically extends from **the thin squamous part of the temporal bone, through the middle ear and along the long axis of the petrous temporal bone**.

Transverse temporal bone fracture “20%” classically originating from **the foramen magnum and running perpendicular to the long axis of the petrous temporal bone**.



Causes:

1. Motor vehicle accidents
2. Physical assaults, falls, and motorcycle accidents
3. Gunshot wounds
4. Longitudinal fractures: caused by lateral force applied over the mastoid or temporal squama by temporal or parietal blows.
5. Transverse fractures: caused by frontal or parietal blows but may result from occipital blows.

-Men aged 21-30 years comprise the most commonly affected group.

-Rarely purely transverse or longitudinal, often it is mixed

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Signs and Symptoms:

- Longitudinal fractures may cause facial nerve paralysis “20%” and conductive hearing loss.
- Transverse fractures may cause facial nerve paralysis “40%” and sensorineural hearing loss and vestibular dysfunction (e.g. vertigo and balance disturbance and spontaneous nystagmus)
- The Battle sign (ecchymosis of the postauricular skin) and the raccoon sign (ecchymosis of the periorbital area) may be noted in either type of fracture.
- Drainage from the ear and tinnitus

Diagnosis:

- Otoscopy
- Do not syringe or manipulate external auditory meatus due to risk of inducing meningitis via TM perforation
- CT head
- Audiology, facial nerve tests (for transverse fractures), Schirmer’s test (of lacrimation), stapedial reflexes if CN VII palsy
- If suspecting CSF leak: look for halo sign, send fluid for b-2 transferrin

Treatment:

- ABCs
- Medical – expectant, prevent otogenic meningitis
- Surgical – explore temporal bone, indications:
 - CN VII palsy (immediate and complete)
 - gunshot wound
 - depressed fracture of external auditory meatus
 - early meningitis (mastoidectomy)
 - bleeding intracranially from sinus
 - CSF otorrhea (may resolve spontaneously)

Complications:

- Acute otitis media ± labyrinthitis ± mastoiditis
- Meningitis/epidural abscess/brain abscess
- Post-traumatic cholesteatoma



Signs of Basilar Skull Fracture

Battle's Sign: ecchymosis of the mastoid process of the temporal bone

Raccoon Eyes

CSF Rhinorrhea/Otorrhea

Cranial Nerve Involvement: facial palsy → CN VII, nystagmus → CN VI, facial numbness → CN V



The halo sign: the double ringed appearance of CSF fluid on white filter paper as it separates out from blood.



Hemotympanum can be indicative of temporal bone trauma.

Table 3.14 Complications of temporal bone fractures

Longitudinal fracture	Transverse fracture
Conductive hearing loss due to middle ear ossicular disruption	Sensorineural hearing loss and vertigo due to disruption of the facial nerve and vestibulo-cochlear apparatus
CSF otorrhea (due to disruption of the tympanic membrane)	CSF rhinorrhoea (there is not usually disruption to the tympanic membrane and CSF leakage is more usually through the nasal cavity via the Eustachian tube)
Meningitis	Meningitis
Facial nerve injury	Facial nerve injury (higher incidence than in longitudinal fractures)
Perforation of the tympanic membrane	

History taking: (not a common station)

In any case of temporal bone fracture, you have to ask “if the patient’s condition was stable” or look for the following:

1. **Age**
2. **Hearing loss**
3. Signs and symptoms of **vestibular** dysfunction like vertigo or imbalance
4. **Tinnitus** “how does the tinnitus sound, the site, the onset, constant or intermittent, the same or progressive, intensity, aggravating and alleviating factors, previous episode and its cause and management”
5. **Autophony** (hearing oneself speak or other internal noises)
6. Ear **fullness** or pressure
7. **Facial weakness** “attention to eye closure is extremely important”
8. **Drainage** from ear or nose
9. **Accumulation** of fluids, blood, or pus inside the ear
10. **Meningitis symptoms:** fever, headache, stiff neck, and altered mental status
11. Hx of **trauma** or assaults

Foreign Body Aspiration

More foreign body aspirations occur in children **younger than three years**. The most common entities aspirated are small food items such as nuts, raisins, sunflower seeds, improperly chewed pieces of meat and small, smooth items such as grapes, hot dogs, and sausages.

Clinical presentation:

Acute episode: **period of choking, gagging, wheezing, coughing, or hoarseness**.

Asymptomatic period: cough or wheezing are possible.

Complications: **pneumonia, obstructive emphysema and bronchiectasis**.

In case of complete airway obstruction, the patient may present with sudden respiratory distress followed by inability to speak or cough.

Investigation:

1. Chest x-ray
2. Fluoroscopy and CT scan may be used
3. **Bronchoscopy "the gold standard"**

Management:

1. Dislodgment using back blows and chest compressions in infants.
2. Heimlich manoeuvre in older children
3. If the obstructing body is below the larynx and does not move with standard recommended procedures, remove it **under general anesthesia using the ventilating rigid bronchoscope**.

History taking:

1. Did you witness the child ingesting a foreign body?
2. Did the child report to you that he/she ingested a foreign body?
3. Do you know what the foreign body is? (Size, shape, identity)
4. Do you know when the child ingested the foreign body?
5. Have you found the foreign body in the stool already?
6. Has the child previously swallowed any objects before?
7. Does the child has any other medical illnesses or has had previous surgery?
8. Does the child have fever, abdominal pain, or vomiting? If yes, where is the pain? What color, and how much vomit? Any blood in the vomit?
9. Has the child had any stools? If so, how many times, what color? **We need to be aware of potential GI obstruction**
10. Is the child having difficulty breathing or showing any signs of airway compromise? If yes, we need to retrieve the object promptly.
11. **Associated symptoms:** hemoptysis, dyspnea, wheezing, chest pain, voice changes, and choking while eating
12. **Persistent or recurrent infection? "Pneumonia, lung abscess"**

DDx: Foreign body aspiration, pharyngitis, esophagitis, gastritis, peptic ulcer disease, GI obstruction, pneumonia, pneumothorax.

If you are interested, check these two cases:

<http://www.consultant360.com/articles/foreign-body-aspiration-2-cases>

For mistakes or feedback

ENTteam432@gmail.com