**Imaging of Temporal Bone Trauma**

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**Introduction**

- Fractures of the temporal bone are common in cases of major head trauma, with a reported incidence of 3%–22% in patients with skull fractures.
- Imaging plays an important role in the evaluation of temporal bone trauma.
- While high resolution temporal bone CT is the modality of choice for evaluating temporal bone trauma, CTA/V or MRA/V and high resolution MRI may be helpful for the assessment of associated complications.
- Familiarity with the patterns of injury, associated complications, and how the imaging findings pertain to management can optimize imaging interpretation.
- The purpose of this talk is to comprehensively review the radiological manifestations of the different types of temporal trauma, potential pitfalls on imaging, and management considerations.
- Updated classification schemes and treatment options are highlighted and associated complications and their management are reviewed.

**Fracture Mimics**

- Extrinsic sutures - between the temporal bone and surrounding bones
- Intrinsic fissures - within portions of the temporal bone
- Intrinsic channels - cochlear aqueduct, petromastoid canal, singular nerve canal, mastoid canaliculus, inferior tympanic canaliculus
Fracture Mechanisms

- Penetrating Trauma
- Blunt trauma
- Barotrauma
- Thermal Injury
- Avulsion Injury

Classification system

- **Traditional System – Longitudinal versus Transverse**
  - Not good for fx geometry
  - Does not address oblique or mixed fx
  - Does not correlate with clinical outcome

- **New System – Otic capsule sparing versus violating**
  - correlates better with clinical outcome and complications

Complications

- **Local/Temporal Bone**
  - Hearing Loss
    - Ossicular injury-Conductive hearing loss
    - Cochlear injury-Sensorineural hearing loss
  - CSF Leak
  - Facial nerve injury
  - Vestibulopathy-vestibular injury

- **Intracranial**
  - Arterial injury
  - Venous injury
  - Hemorrhage
**Ossicular Chain Injury**

- More common with longitudinal Fx of T bone
- Incus most commonly injured (heaviest ossicle, no muscular/least ligamentous attachment)
- Ossicular Dislocation is more common than Ossicular Fx
  - Incudostapedial jt separation: most common dislocation but may be missed due to subtle findings
  - Incudomalleal jt separation
  - Incus dislocation
  - Malleo-incudal complex dislocation
  - Stapediovestibular dislocation

**Reference:**

Juliano AF, Ginat DT, Moonis G.