


به نام

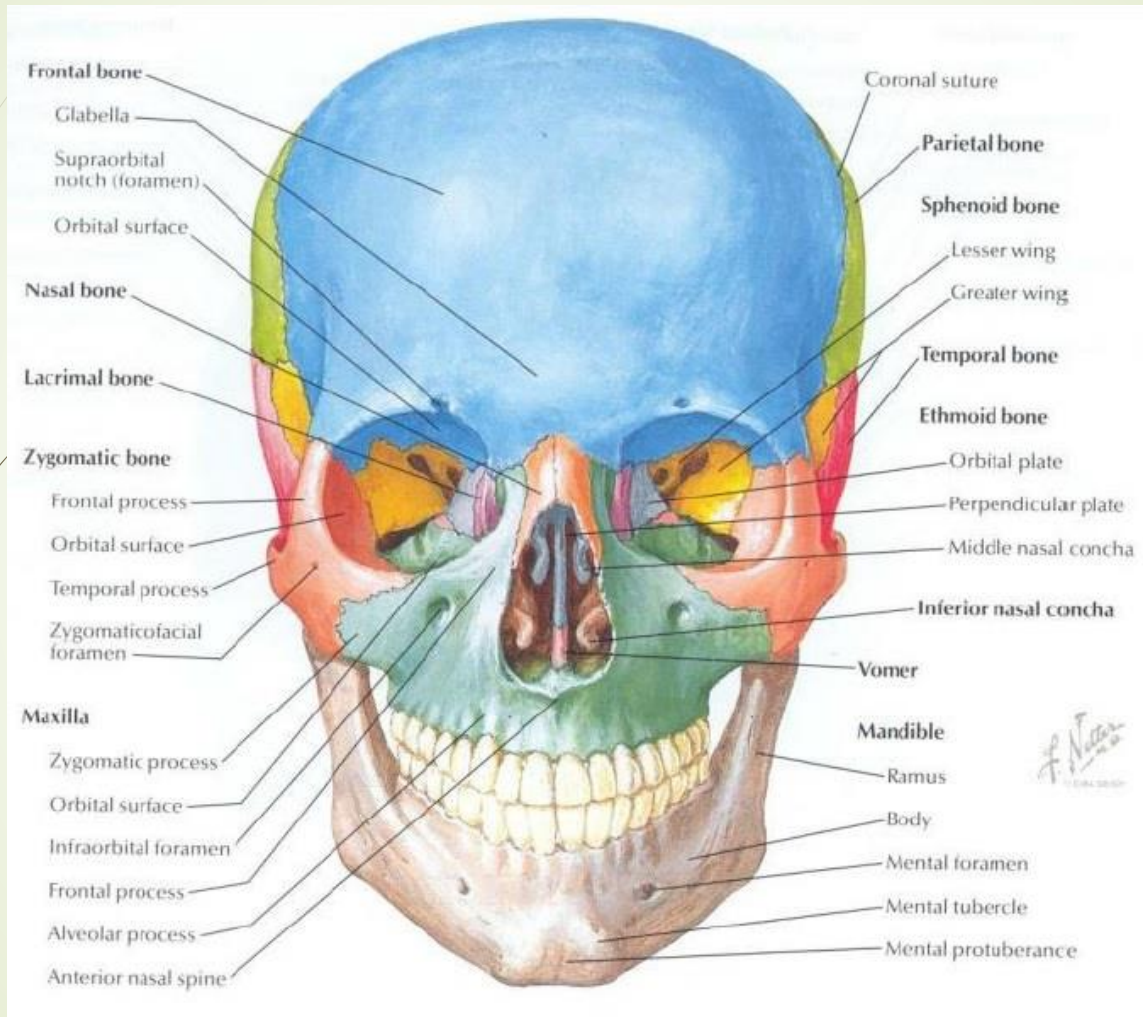
خدایی

که داننده می رازهاست



EMERGENCY MANAGEMENT OF MAXILLOFACIAL TRAUMATIC PATIENTS

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Etiology

- Sports
 - Vehicular Accidents
 - Mauling
-
- Women – consider the possibility of domestic violence



Etiology

- Patients with severe facial trauma:
 - multisystem trauma
 - potential for airway compromise
 - concurrent brain injury
 - cervical spine injuries
 - blindness



Emergent Management

- Primary Survey
 - Airway
 - Breathing
 - Circulation
- Secondary Survey



Emergent Management

Airway:

- Chin lift.
- Jaw thrust.
- Oropharyngeal suctioning
- Manually move the tongue forward

- Maintain cervical immobilization



Emergent Management

- Avoid nasotracheal intubation
 - Adverse effects:
 - Nasocranial intubation
 - Nasal hemorrhage
- → cricothyroidotomy



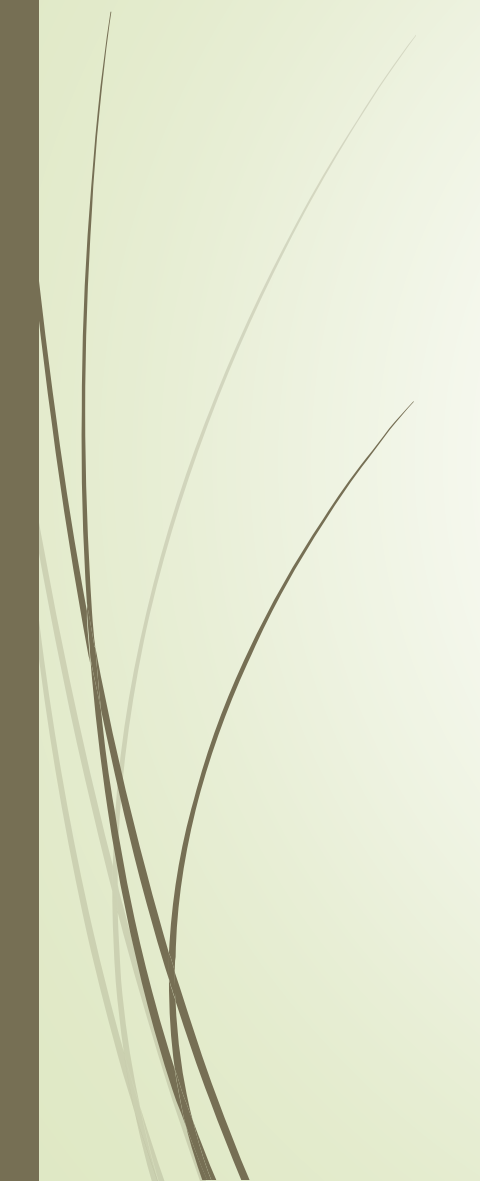
Emergent Management

Circulation:

- Direct pressure
- Anterior and posterior nasal packing
- Packing of the pharynx around ET tube



History

- Place, Time, Date, Mechanism of injury
 - Detailed description of the circumstances surrounding the injury
 - Allergies, other medical problems, medications, tetanus immunizations
- 



History

- Questions:
 - Was there LOC, nausea/vomiting, headache? (Head Trauma related questions)
 - How is your vision?
 - Hearing problems?
 - Is there pain with eye movement?
 - Are there areas of numbness or tingling on your face?
 - Able to bite down without any pain?
 - Is there pain with moving the jaw?

Physical Examination

Inspection

- Open wounds for foreign bodies
- Facial asymmetry
- Nose for deviation, widening of bridge
- Nasal septum for septal hematoma, CSF or blood
- Ears for blood or CSF
- Malocclusion



Physical Examination

Inspection



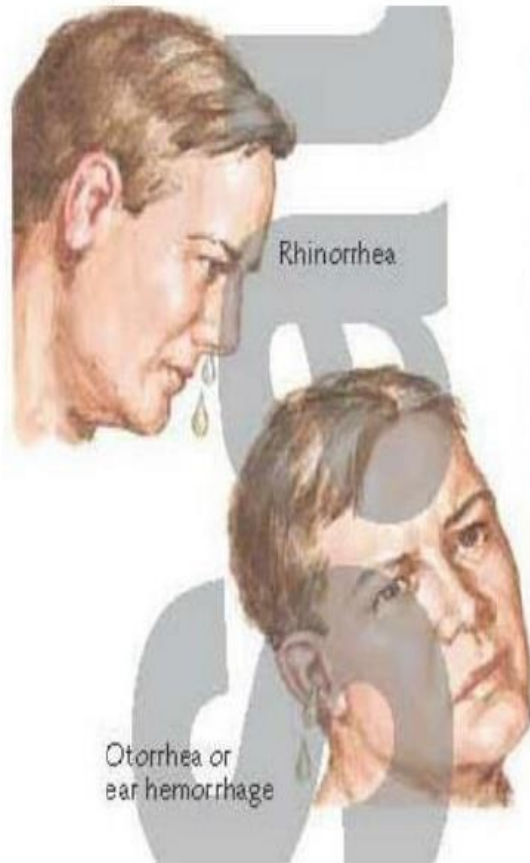
- Battle's sign



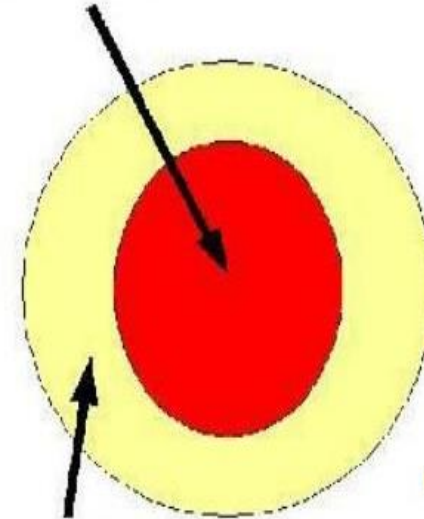
- Raccoon eyes

Physical Examination

Inspection



Blood



CSF

■ Halo Sign

- Not sensitive or specific but can be used as a preliminary test for CSF in blood
- Dipstick
- Beta transferrin

Physical Examination

Palpation

- Palpate the entire face.
 - Supraorbital and Infraorbital rim
 - Zygomatic-frontal suture
 - Zygomatic arches
- Nose - crepitus, deformity and subcutaneous air
- Zygoma along its arch and its articulations with the maxilla, frontal and temporal bone
- Mandible for tenderness, swelling



Physical Examination

- Intraoral examination:
 - Inspect the teeth for malocclusions, bleeding
 - Manipulation of each tooth
 - Check for lacerations
 - Mandibular movements

Physical Examination

Ophthalmologic exam

- Visual acuity
- Pupils for shape and reactivity
- Eyelids for lacerations
- Extra ocular muscles
- Palpate around the orbits





Diagnostic Imaging

- Plain films
 - Confirm suspected clinical diagnosis
 - Determine extent of injury
 - Document fractures
- CT scan



General Treatment

- ATS, TeAna
- Thorough evaluation of all wounds
- All foreign bodies must be removed
- Debridement
- Suturing of lacerations as needed
 - Minimize scarring
- Antibiotics

Physical Examination

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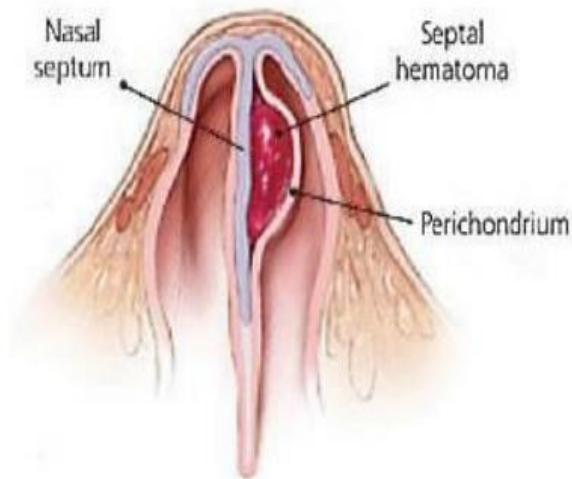
Nasal Fractures

- Most common bone injury in the face
- Open or closed
- Signs
 - Depression or displacement of nasal bones
 - Edema of nose
 - Epistaxis
 - Fracture of septal cartilage with displacement or mobility
 - Crepitus on palpation



Nasal Fractures

- All nasal injuries should be evaluated for septal hematoma



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- Untreated- result in septal necrosis and saddle nose deformity
- Can become infected- result in a septal abscess



Nasal Fractures

- Radiographs:
 - Lateral projection
- Treatment:
 - Surgical
 - After reduction, nasal cavities should be packed – “internal splinting”

Le Fort I



- Low transverse fracture of maxilla involving palate
- Facial edema
- Mobility of hard palate and upper teeth
- Malocclusion

Le Fort II



- Pyramidal fracture with detachment of maxilla
- Facial edema
- Epistaxis
- Bilateral periorbital edema and ecchymosis

Le Fort III

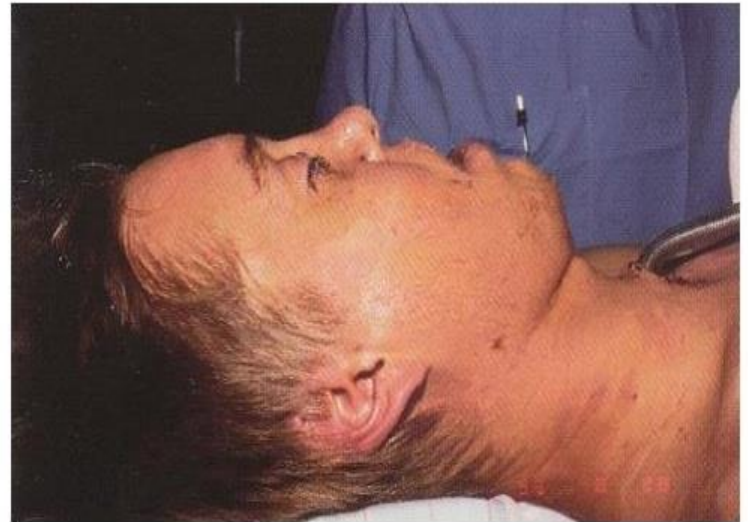
- Complete disruption of attachments of facial skeleton to cranium
- Movement of all facial bones in relation to the cranial base with manipulation of the teeth and hard palate
 - Open patient's mouth and grasp the maxilla arch
 - Place the other hand on the forehead
 - Gently move back and forth, up and down - check for movement of maxilla

Le Fort III



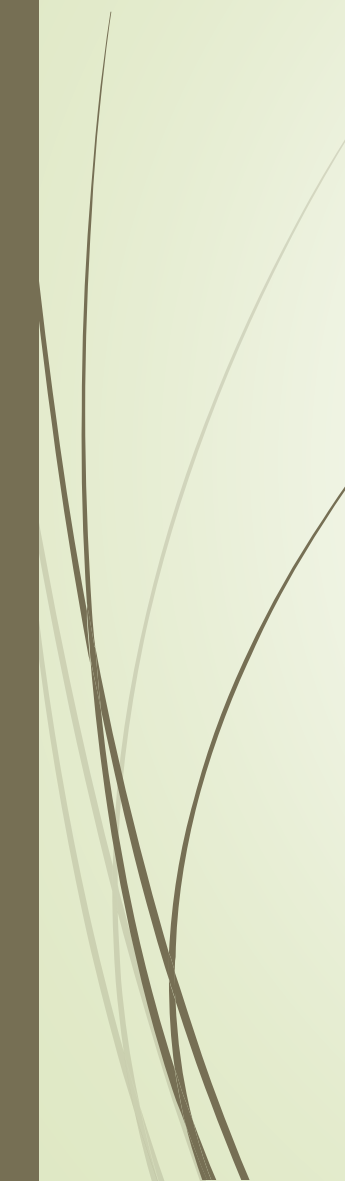
Le Fort III

- Massive edema with facial elongation, flattening – “Dish faced deformity”
- Epistaxis and CSF rhinorrhea
- Motion of the maxilla, nasal bones and zygoma





Management of Le Fort Fractures

- Open reduction and intermaxillary fixation should be performed to establish correct occlusion
 - Followed by rigid fixation at the piriform rims and zygomaticomaxillary buttress.
- 



Zygoma Fractures

- The zygoma has 2 major components:
 - Zygomatic arch
 - Zygomatic body
- Two types of fractures can occur:
 - Isolated Arch fracture -most common
 - Tripod fracture - most serious

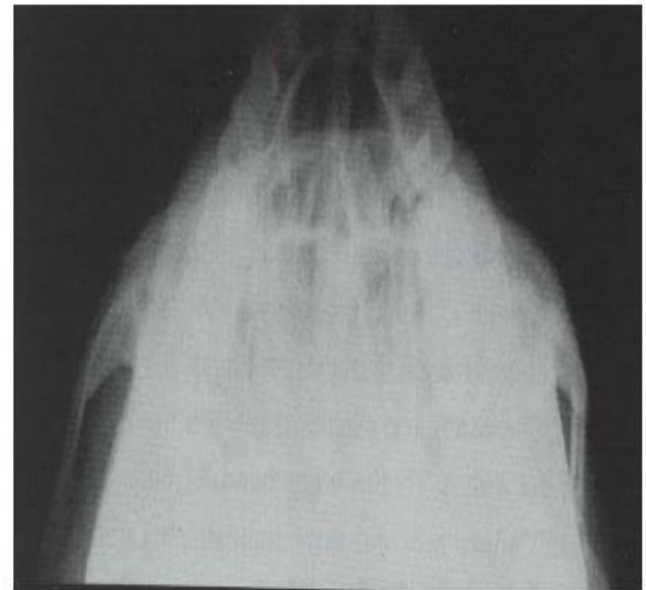
Zygoma Arch Fractures

- Palpable bony defect over the arch
- Flattening of the cheek
- Pain in cheek and jaw movement
- Limited mandibular movement



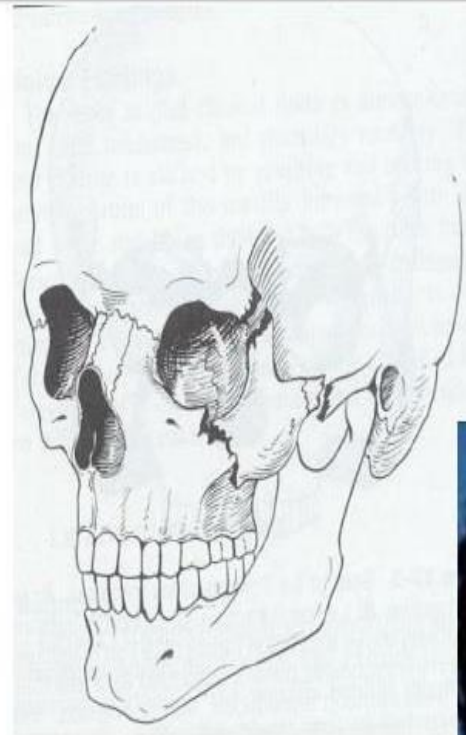
Zygoma Arch Fractures

- Radiographic imaging:
 - Submental view
"bucket handle view"
 - Arches may not be seen in usual views (anterior, lateral)
- Treatment:
 - Symptomatic - surgical



Zygoma Tripod Fractures

- Tripod fractures consist of fractures through:
 - Zygomatic arch
 - Zygomaticofrontal suture
 - Inferior orbital rim and floor
- Symptoms
 - Periorbital edema
 - Sensory disturbances along the infraorbital nerve



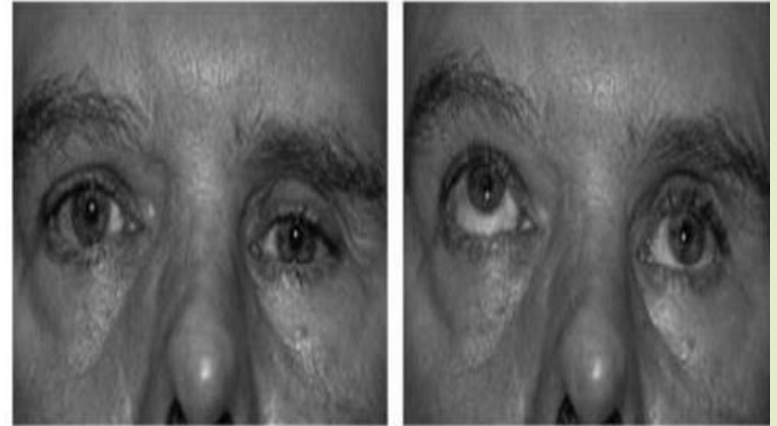
Zygoma Tripod Fractures

- Waters
- Caldwell
- Submental
- Coronal CT

- Treatment:
 - Symptomatic - surgical

Orbital Blow Out Fractures

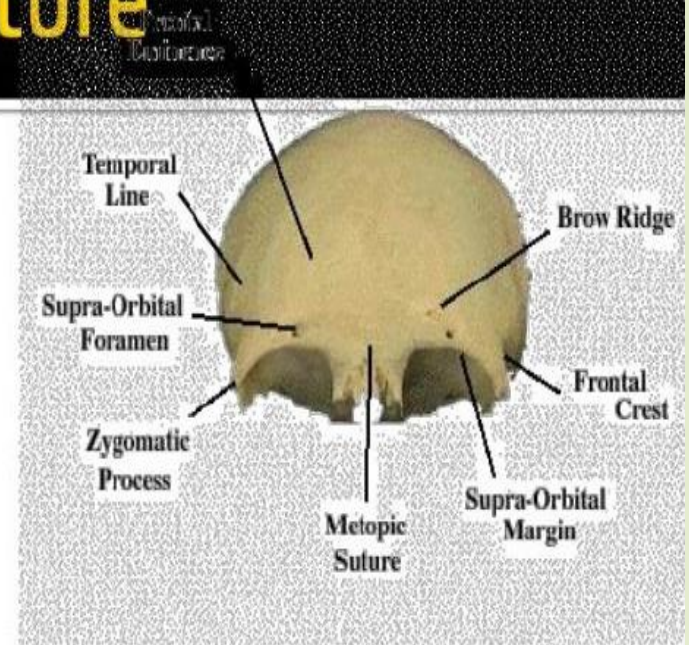
- Isolated fracture of the orbital floor with partial herniation of orbital contents
- Facial asymmetry
- Enophthalmos
- Diplopia on upward gaze-impingement of inf. Rectus
- Check for sensory disturbances – cheek, upper lip, lateral nasal wall



Frontal Sinus Fracture

- Uncommon
- Depression of anterior table of frontal sinus
- Intracranial injuries
- Dural tears
- Epistaxis

- CSF rhinorrhea (disruption of posterior table of frontal sinus with dural rupture)



Frontal Sinus Fracture

- Radiographs:
 - Facial views should include:
 - Waters
 - Caldwell
 - lateral projections
 - Caldwell view best evaluates the anterior wall fractures



Frontal Sinus Fractures

- Cranial CT with bone window
 - Frontal sinus fractures.
 - Orbital rim and nasoethmoidal fractures
 - R/O brain injuries or intracranial bleeds



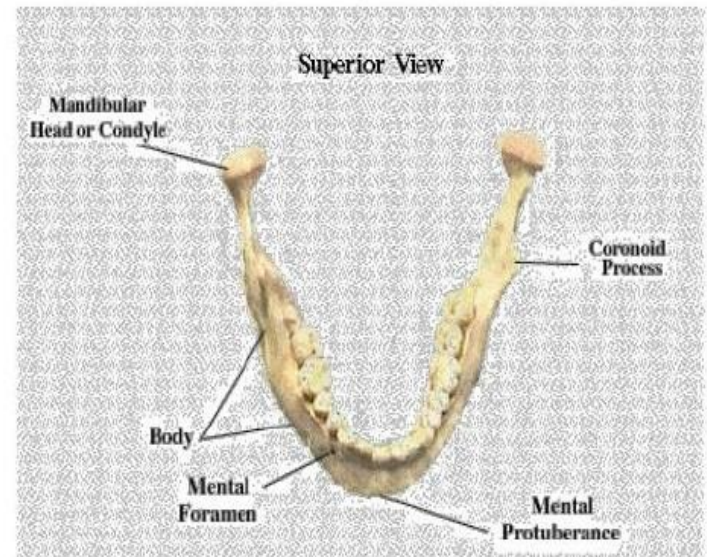


Frontal Sinus Fractures

- Associated with intracranial injuries
 - Orbital roof fractures
 - Dural tears
 - Mucopyocoele
 - Epidural empyema
 - CSF leaks
 - Meningitis

Mandibular Fractures

- 2nd most commonly fractured facial bone
- Signs and symptoms
 - Malocclusion of teeth
 - Tooth mobility
 - Intraoral lacerations
 - Pain on mastication
 - Bone deformity



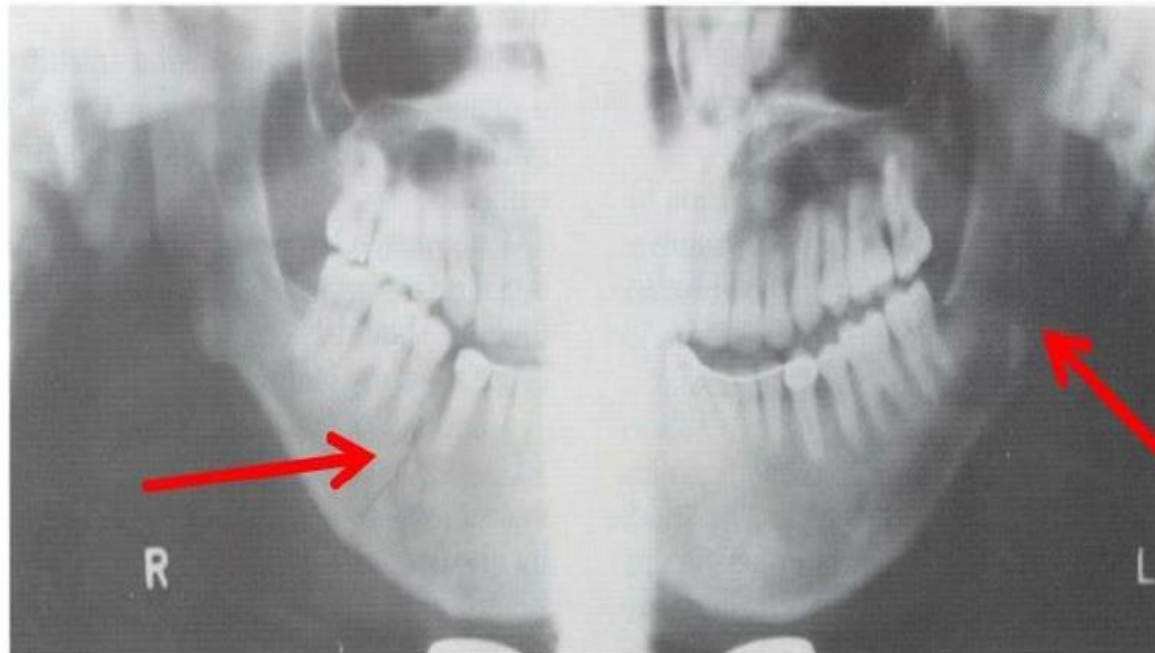
Mandibular Fractures

- Mandibular pain
- Malocclusion of the teeth
- Separation of teeth with intraoral bleeding
- Inability to fully open mouth
- Preauricular pain with biting
- Positive tongue blade test



Mandibular Fractures

- Radiographs:
 - Panorex
 - Plain view: PA, Lateral and a Townes view



Mandibular Fractures

Treatment:

- Nondisplaced fractures:
 - Analgesics
 - Soft diet
 - Dent/ORL surgery referral
- Displaced fractures, open fractures and fractures with associated dental trauma
 - Urgent oral surgery consultation
- All fractures should be treated with antibiotics and tetanus prophylaxis.