Evaluation of Facial Trauma

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Today

-Find all the injuries
-Understand the anatomy of the bony and soft tissues of the face
-Interpret imaging
-Understand descriptive terms and jargon
-Be able to effectively communicate your findings to others

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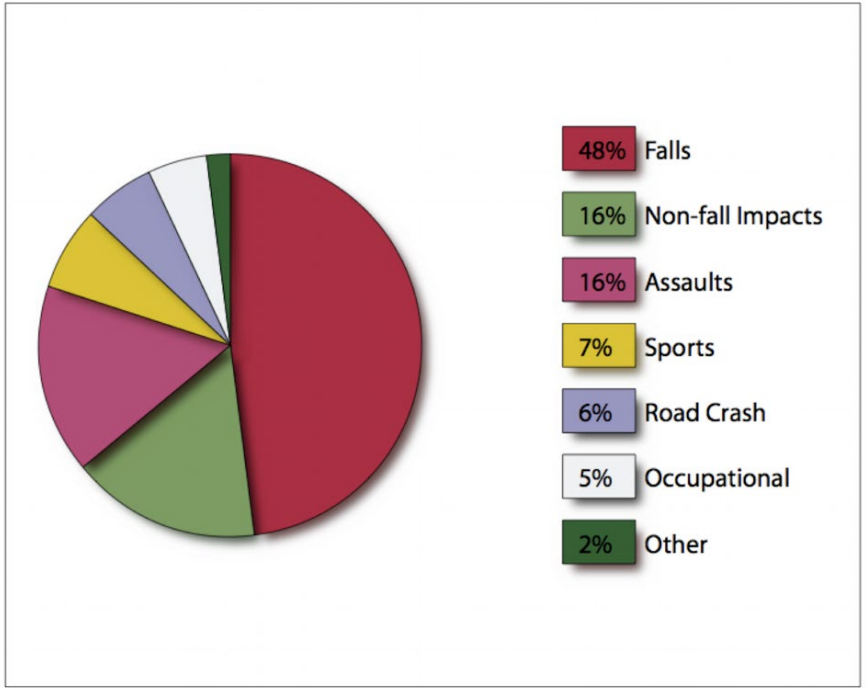
Etiology of Soft Tissue Facial Trauma



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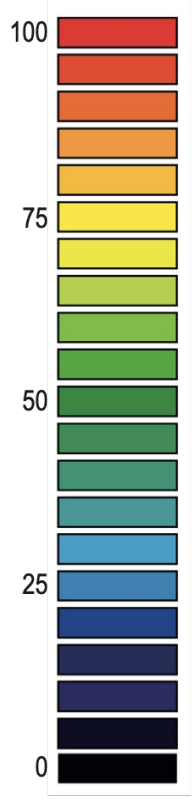
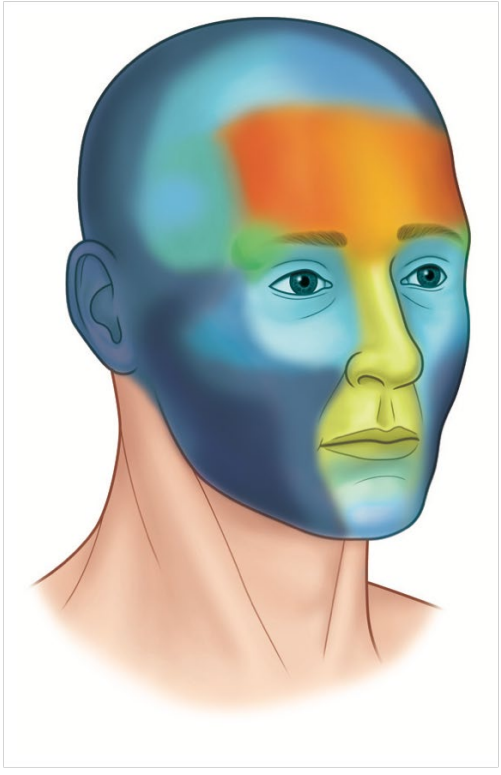
Distribution of 700 injuries





Hussain K, Wijetunge DB, Grubnic S, Jackson IT. A comprehensive analysis of craniofacial trauma. J Trauma 1994;36(1):34-47.

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Facial Fractures

MC
-interpersonal violence
-motor vehicle crashes

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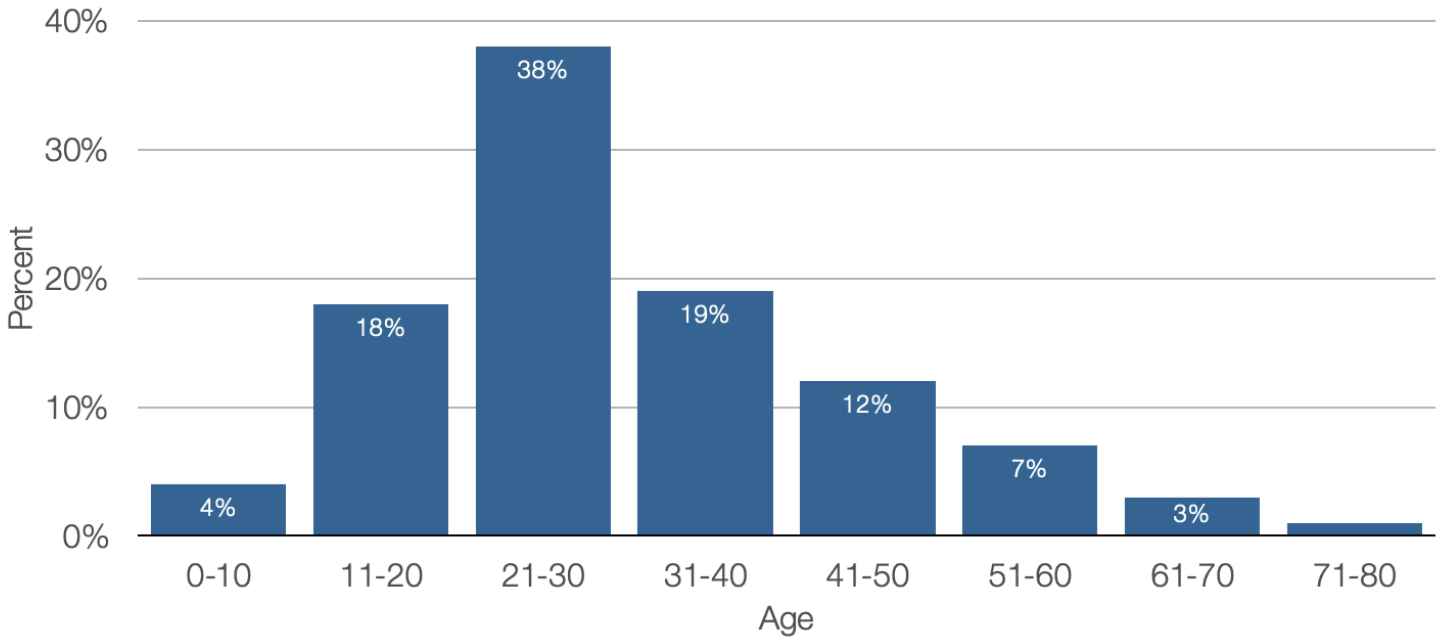
Facial Fractures



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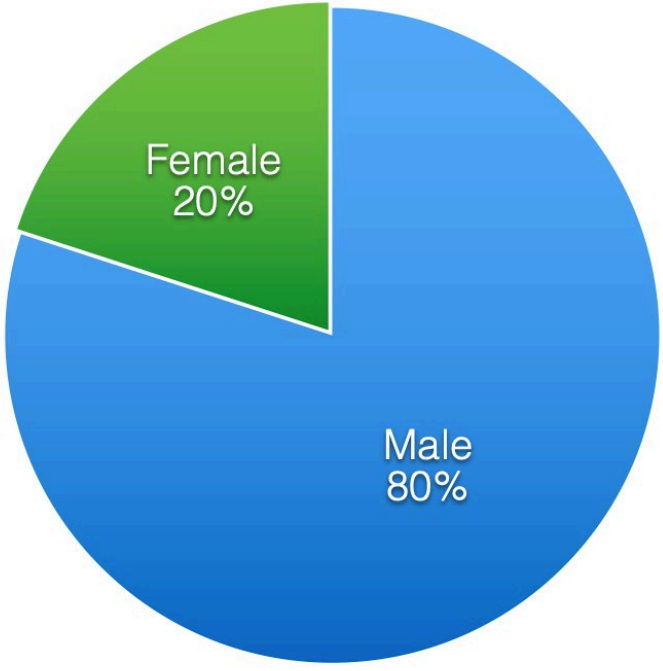
Facial Fractures



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Evaluate for immediate life threatening injuries

- Trauma ABC's
- Your suspicion for other serious injuries will be guided by the nature of the injury.
- A child who falls against a coffee table will have a very low likelihood of serious skeletal injury, while someone injured in a MVC will have a much higher likelihood of skeletal fracture.

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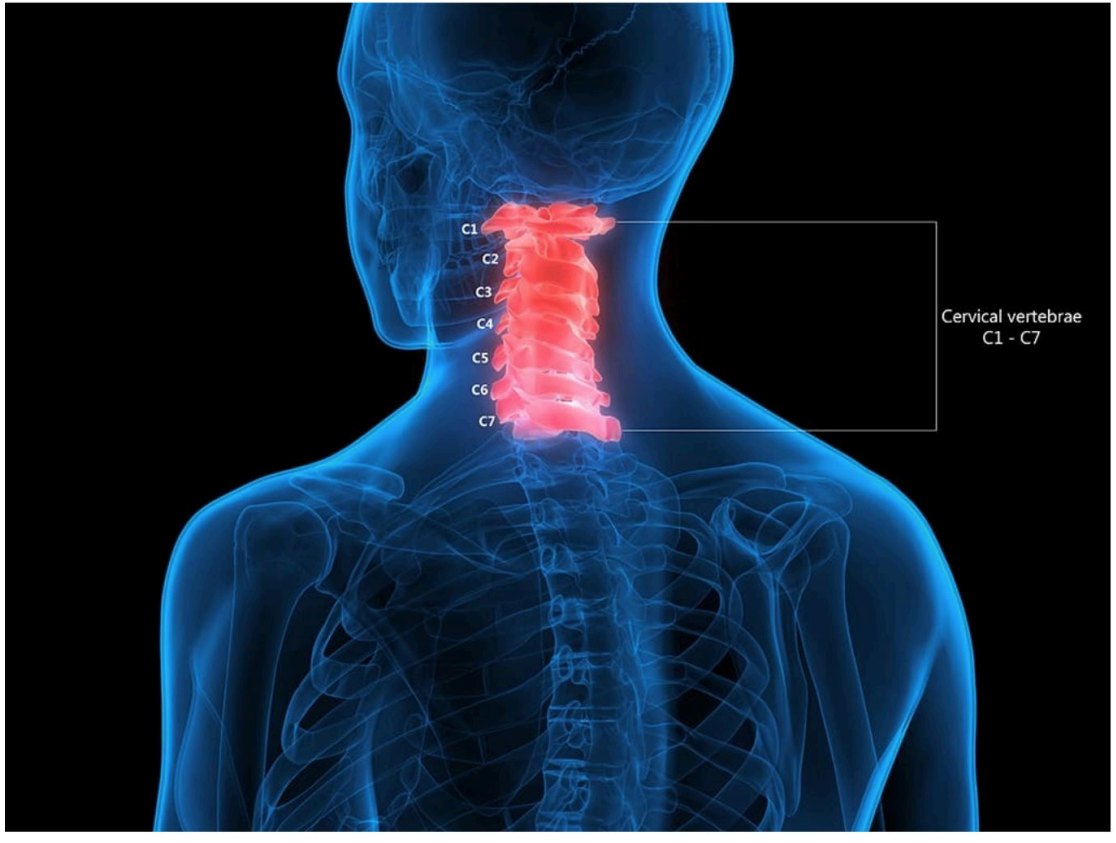
Evaluate for immediate life threatening injuries



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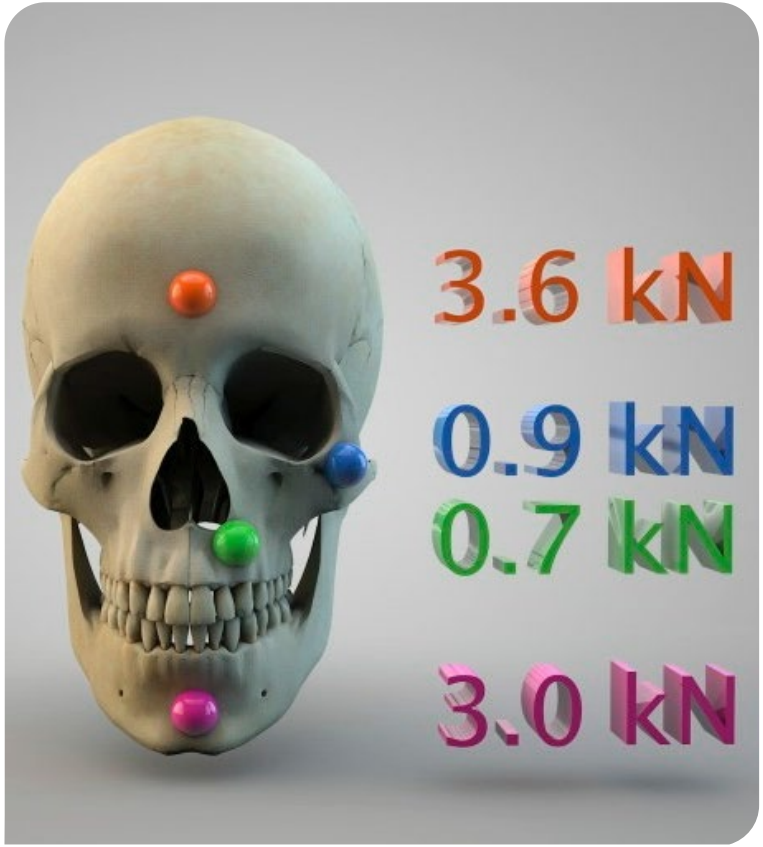
Force



- 1 kN = 224 lbs
- 3.6 kN = 806 lbs

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Basic Anatomy

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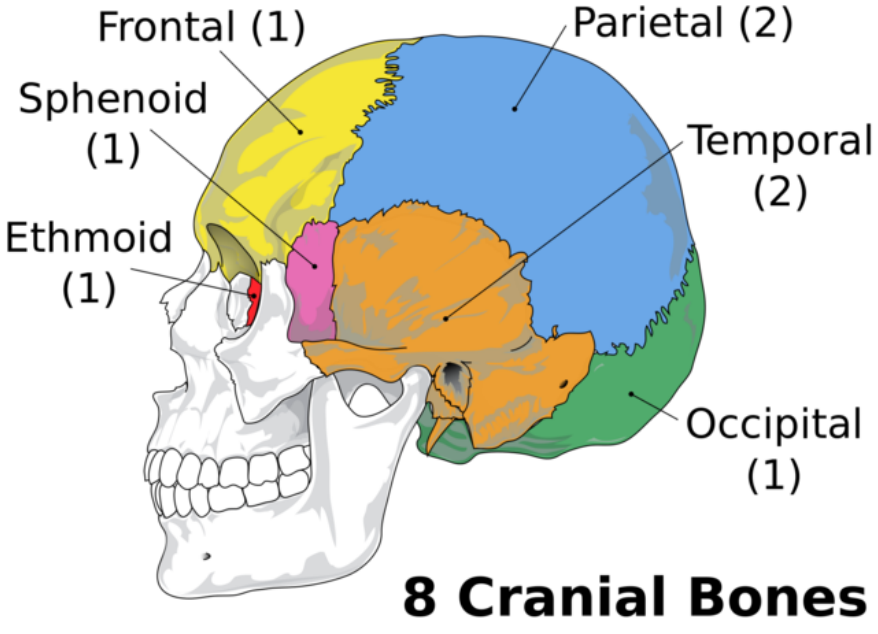
External Anatomy- Scalp



Describe the parts of the scalp: vertex, occiput, temporal, parietal, frontal

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Facial Anatomy

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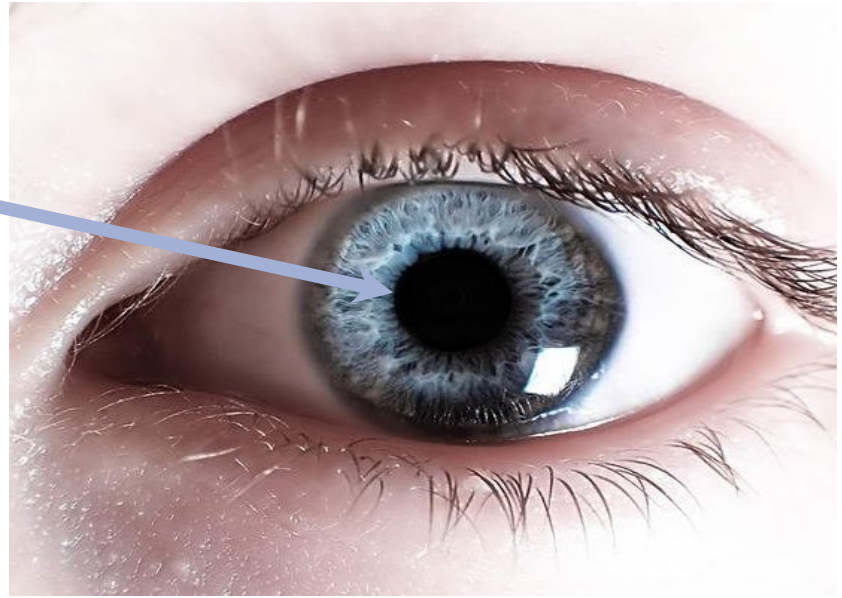
Eye Anatomy

- iris
- pupil
- limbus
- sclera



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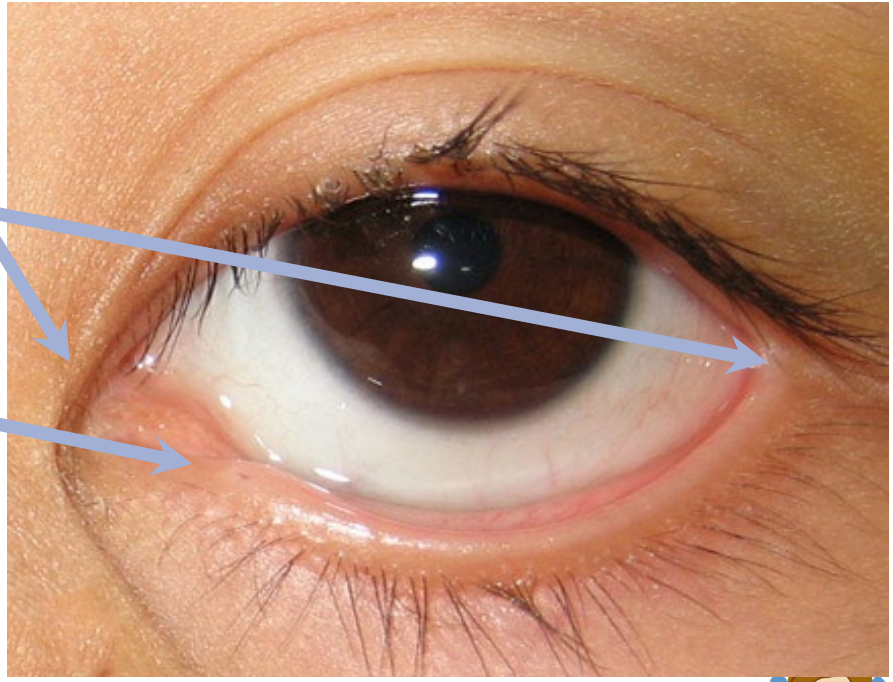
Eye Anatomy

- medial canthus
- lateral canthus
- caruncle
- puncta
- supratarsal fold
- grey line



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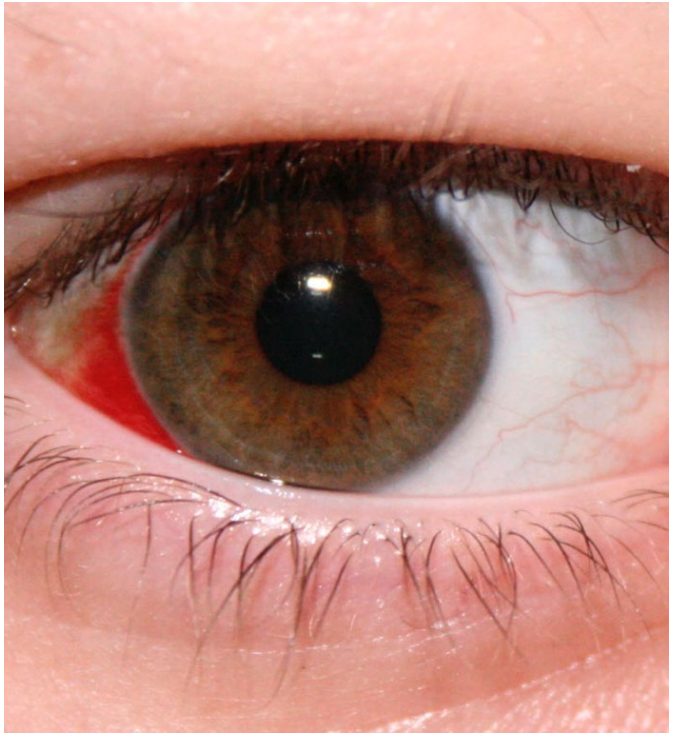
Conjunctival Hemorrhage



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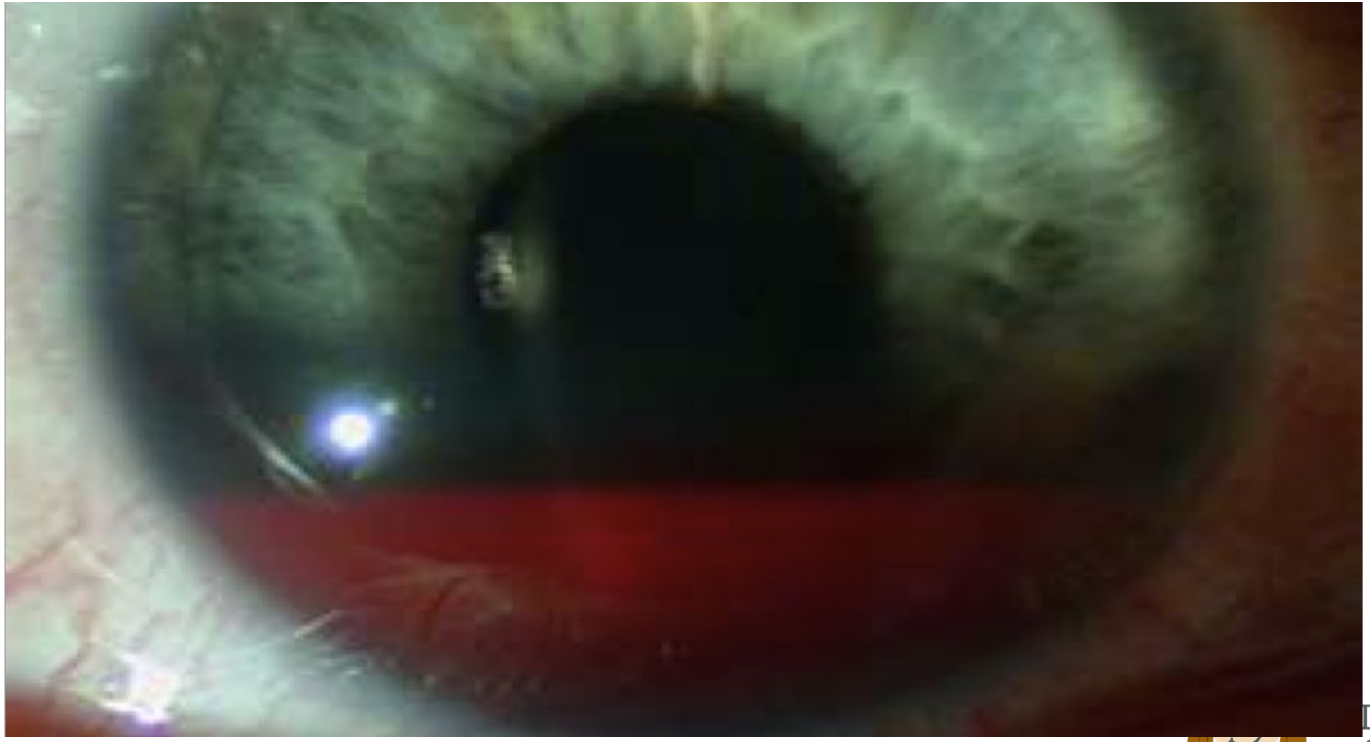
Hyphema



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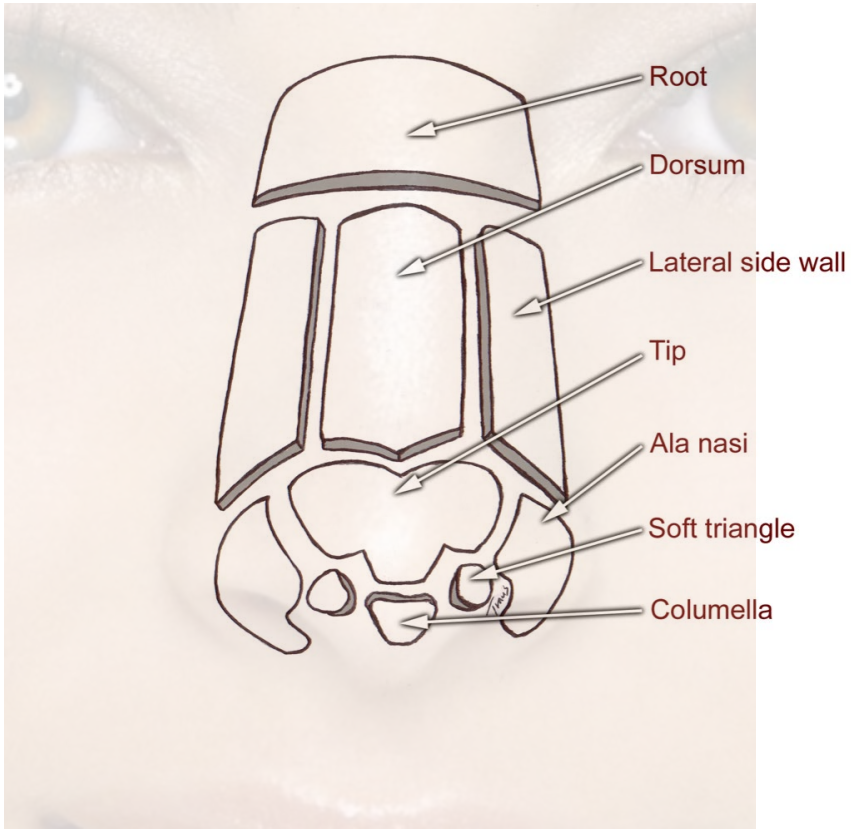
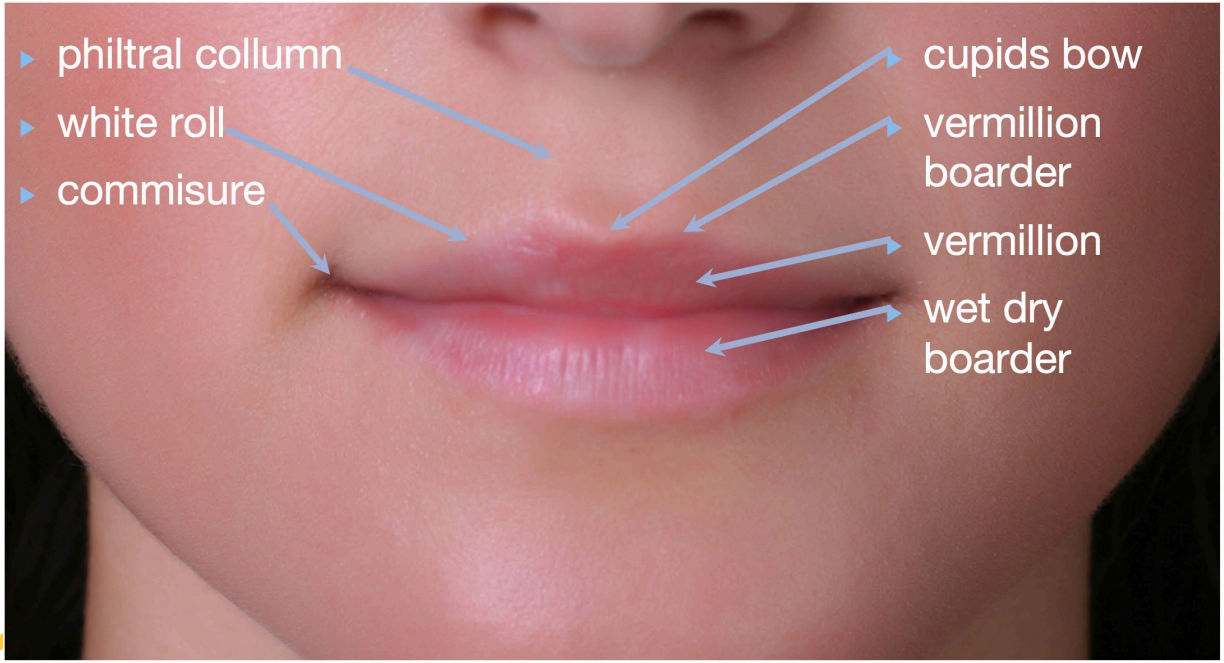
Nasal Subunits



Cartilage exposed or not?

Mouth Anatomy



Laceration crossing the vermillion boarder or not?

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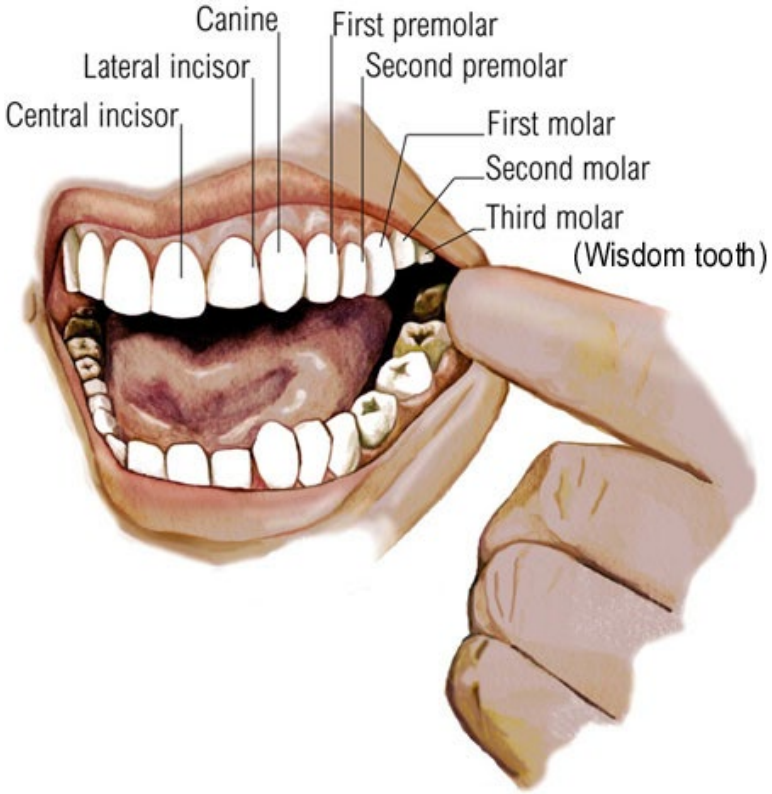
Dentition



Missing or loose?
How's the Occlusion?

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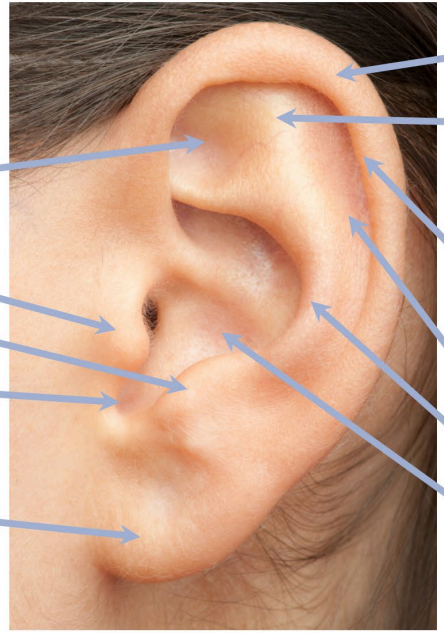
Ear Anatomy



Cartilage exposed or not?

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Nerves-Trigeminal Nerve (V)

Note that most of the important nerve branches exit the skull along the mid-pupillary line.

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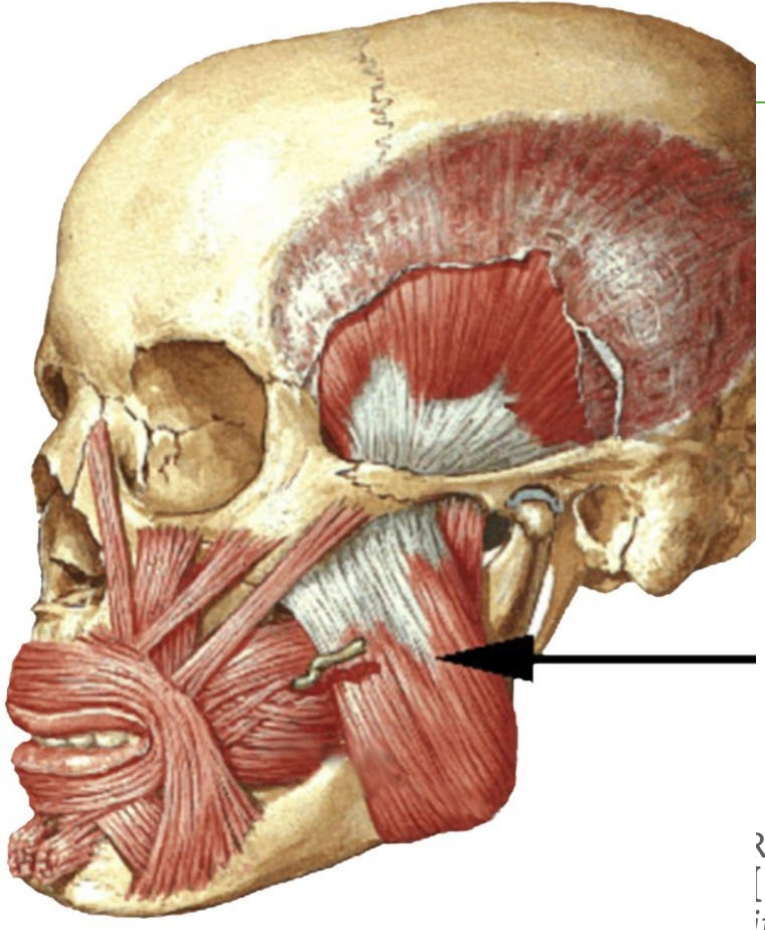
Mastication (V)

- All innervated by trigeminal nerve
- Temporalis
- Masseter
- Medial ptygeroid
- Lateral ptygeroid



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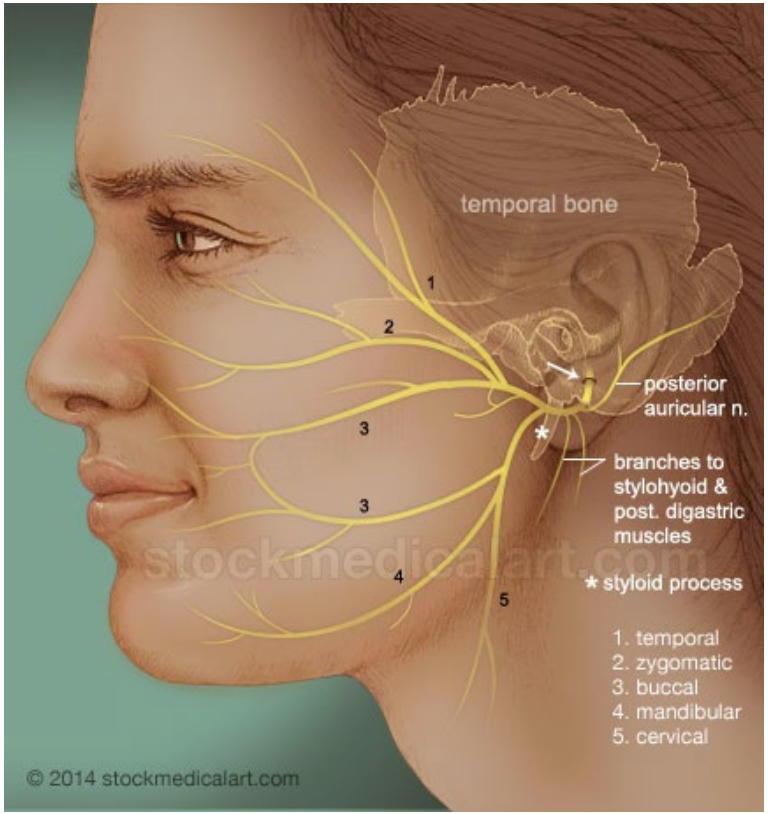
Nerves- Facial Nerve (VII)



- Main trunk of facial nerve is at risk in preauricular injuires
- Marginal mandibular branch of the facial nerve is at risk along mandibular boarder
- Frontotemporal branches of the facial nerve is at risk of injury in brow injuries

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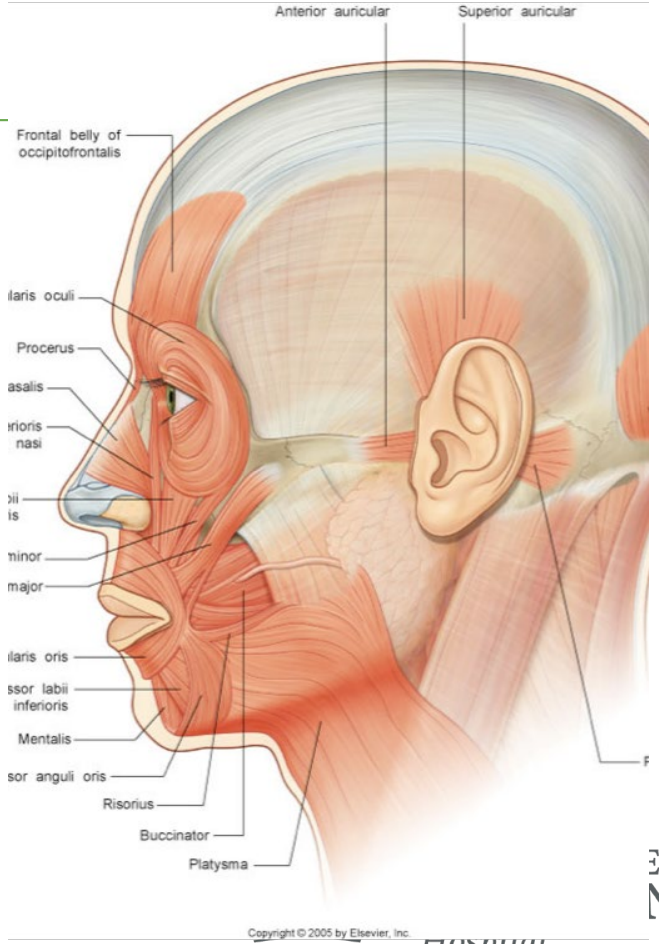
Facial Expression (VII)

- All innervated by facial nerve
- All innervated on the deep surface except
  - mentalis
  - Buccinator
  - levator anguli oris



Facial and Skull Bones

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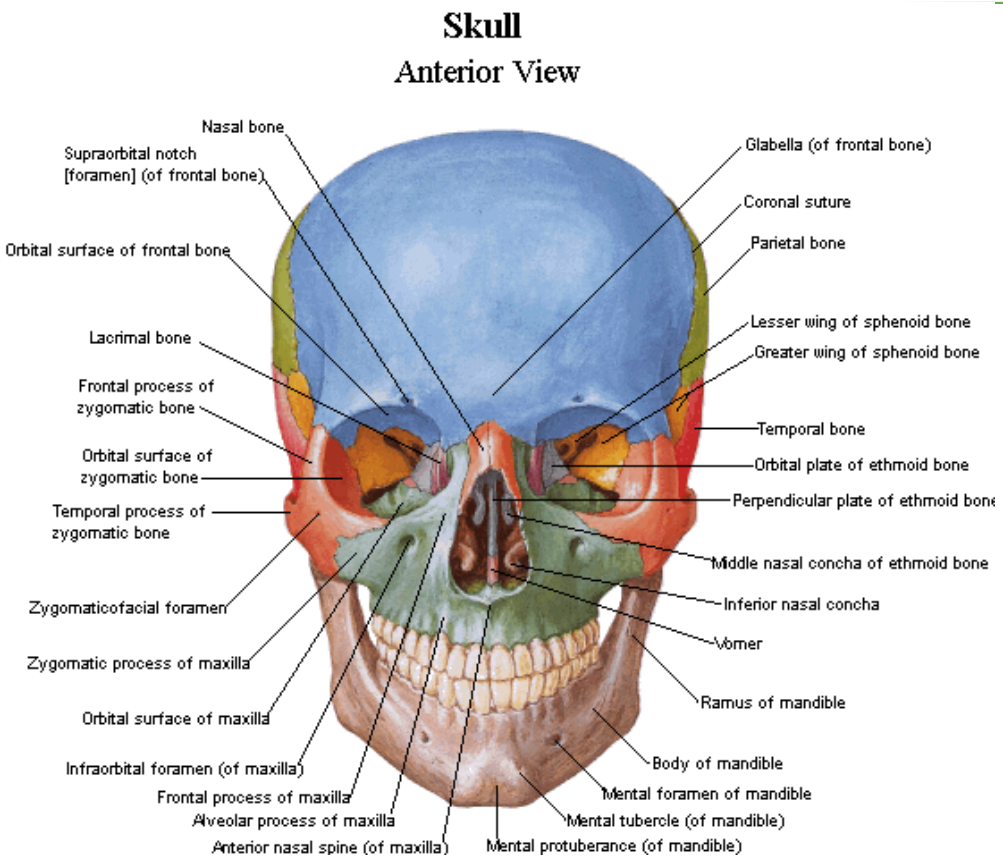
Facial and Skull Bones



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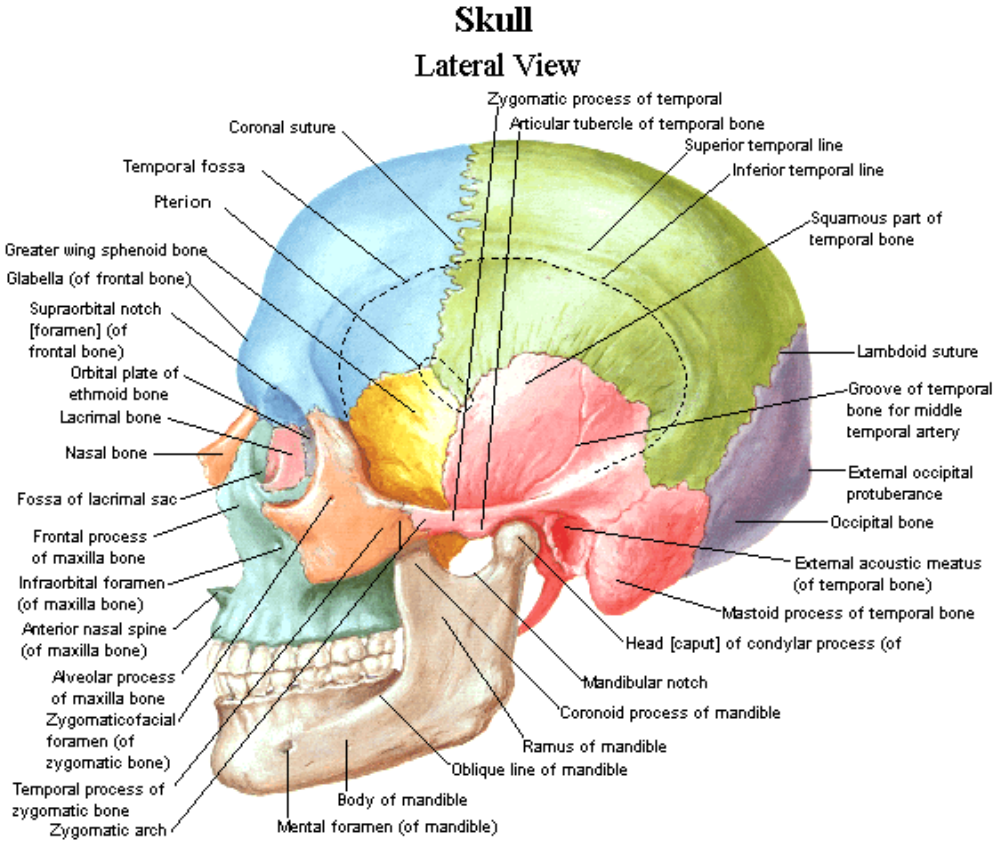
Skull Anatomy



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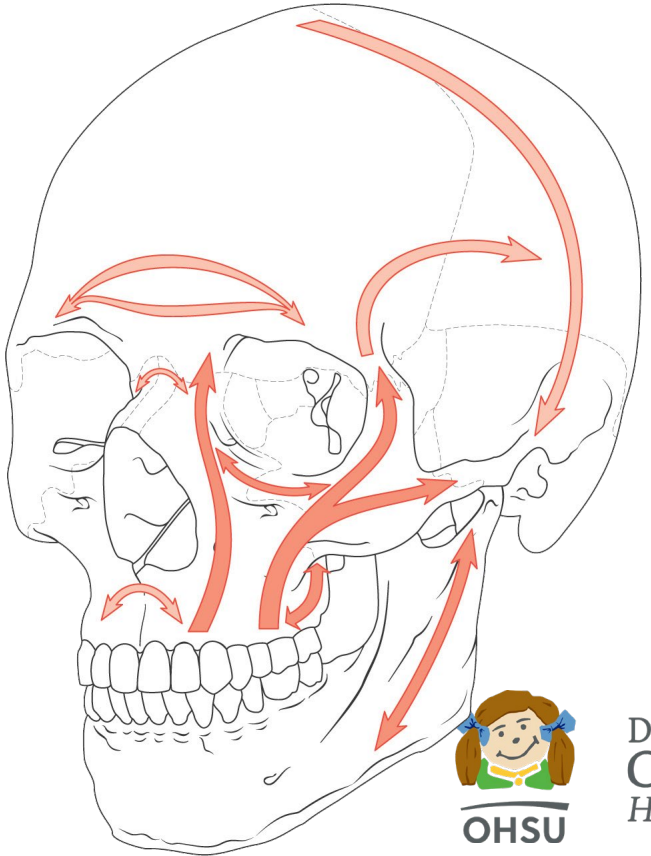
Facial Buttresses

- Areas of thickened bone that transfer load to the skull base (force flow)
- Thicker bone that can hold a plate
- Site for assessing anatomic reduction



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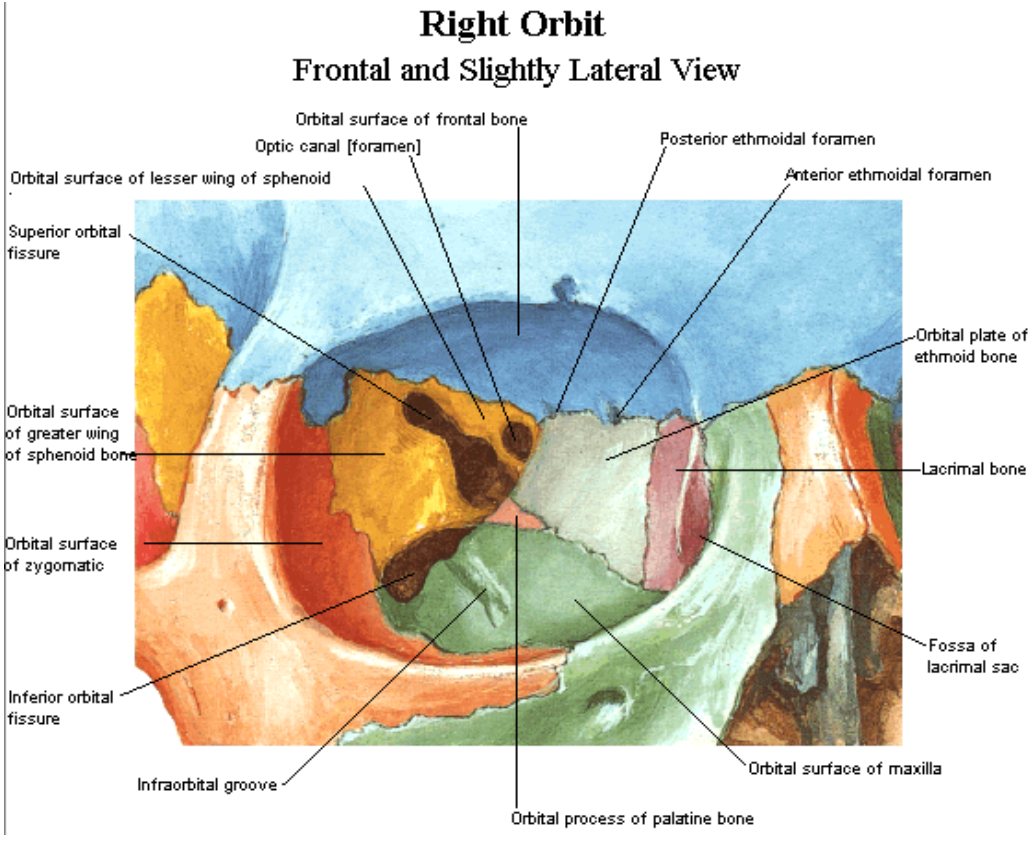
Orbit Anatomy



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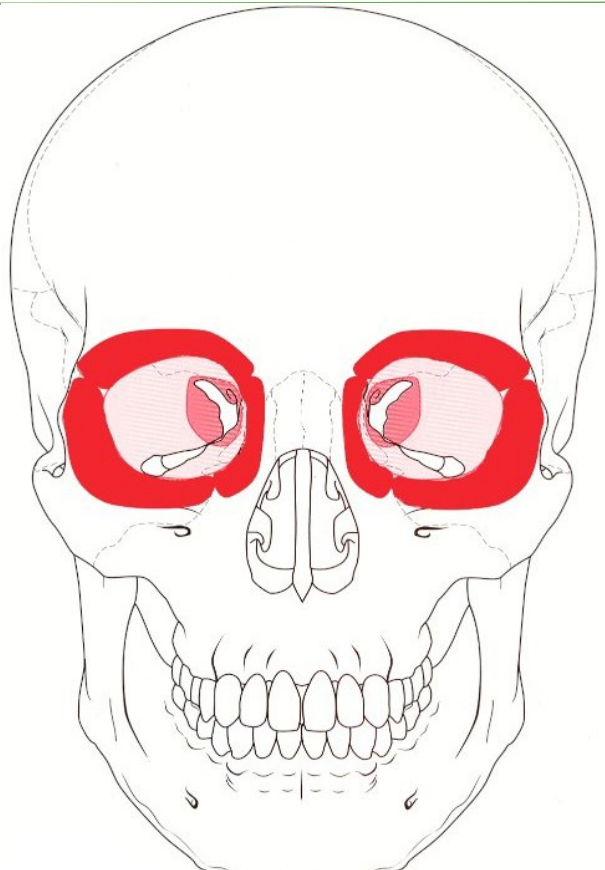
Orbit Anatomy



- Anterior orbit
- Middle Orbit surface
- Posterior orbit

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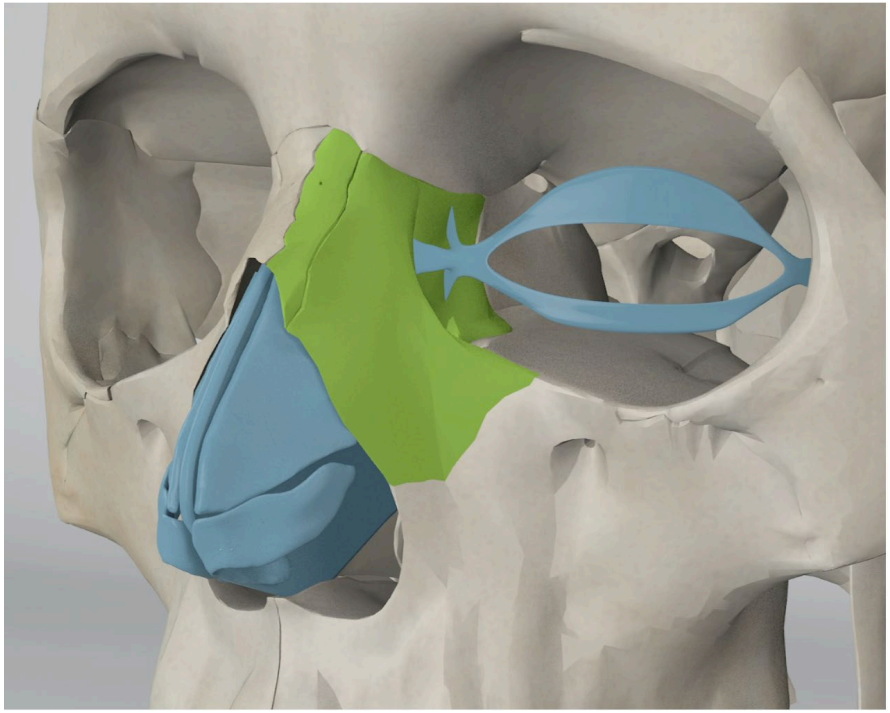
Naso-Orbital-Ethmoid Fractures



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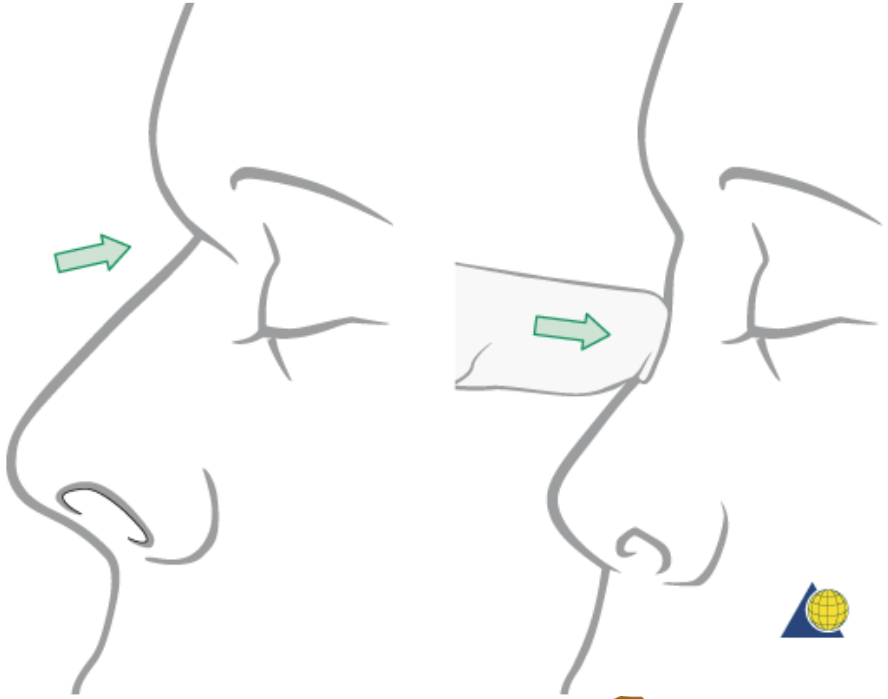
Naso-Orbital-Ethmoid Fractures



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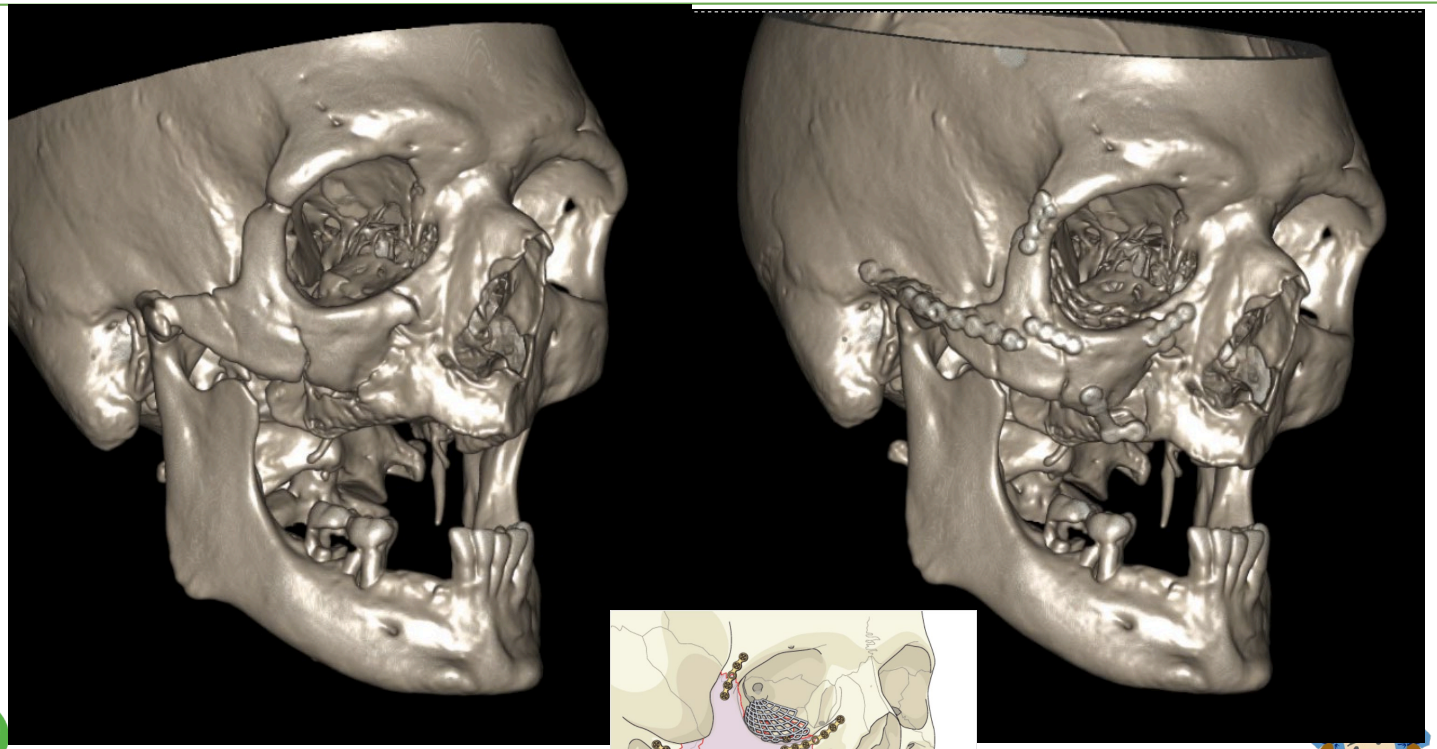
Zygomaticomaxillary Complex



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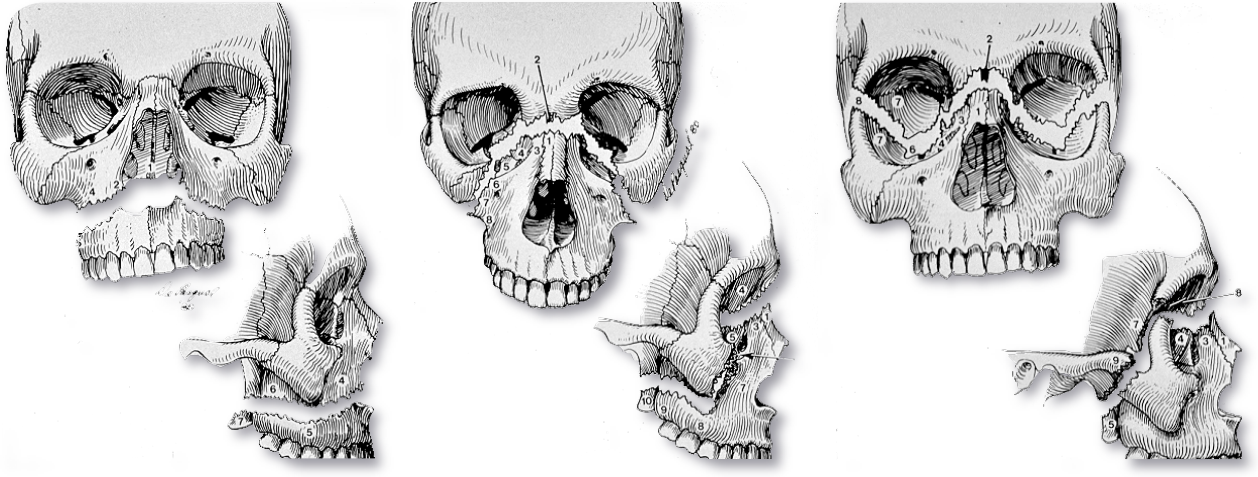
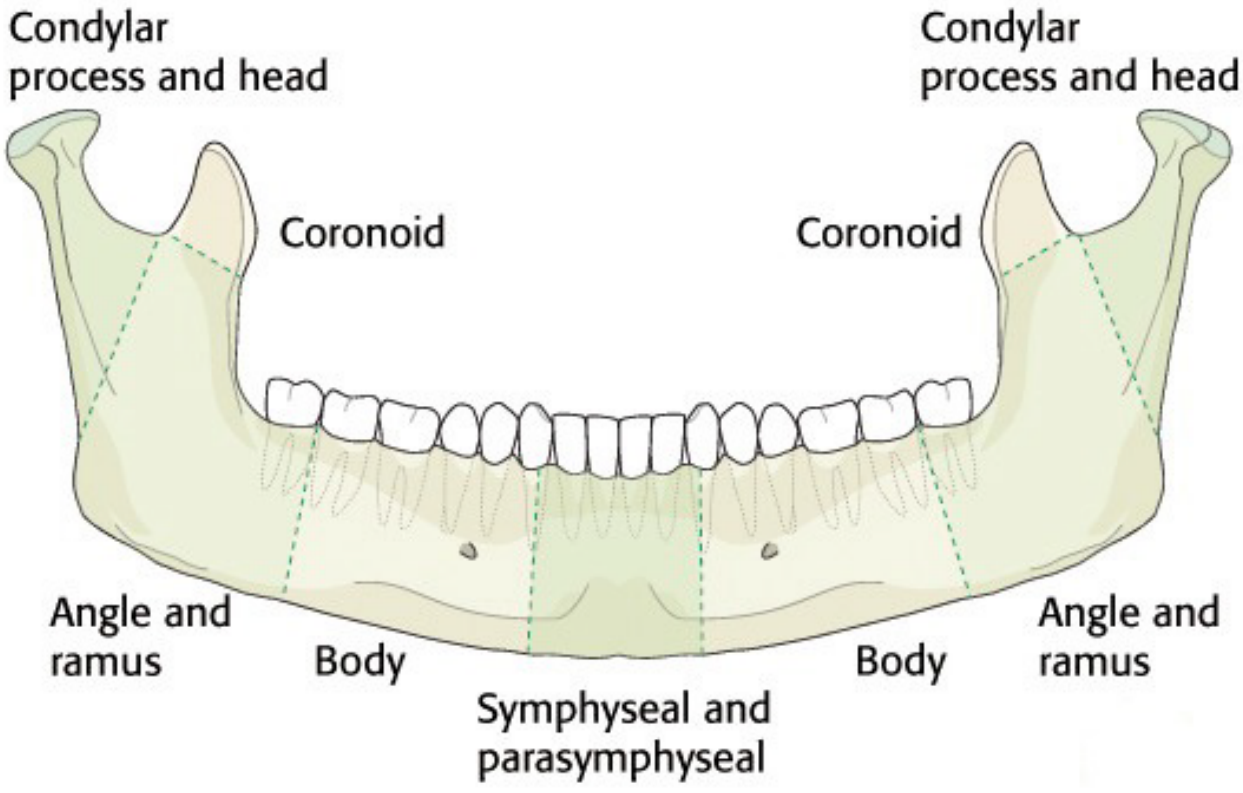
LeFort



LeFort I LeFort II LeFort III

Mandibular Anatomy



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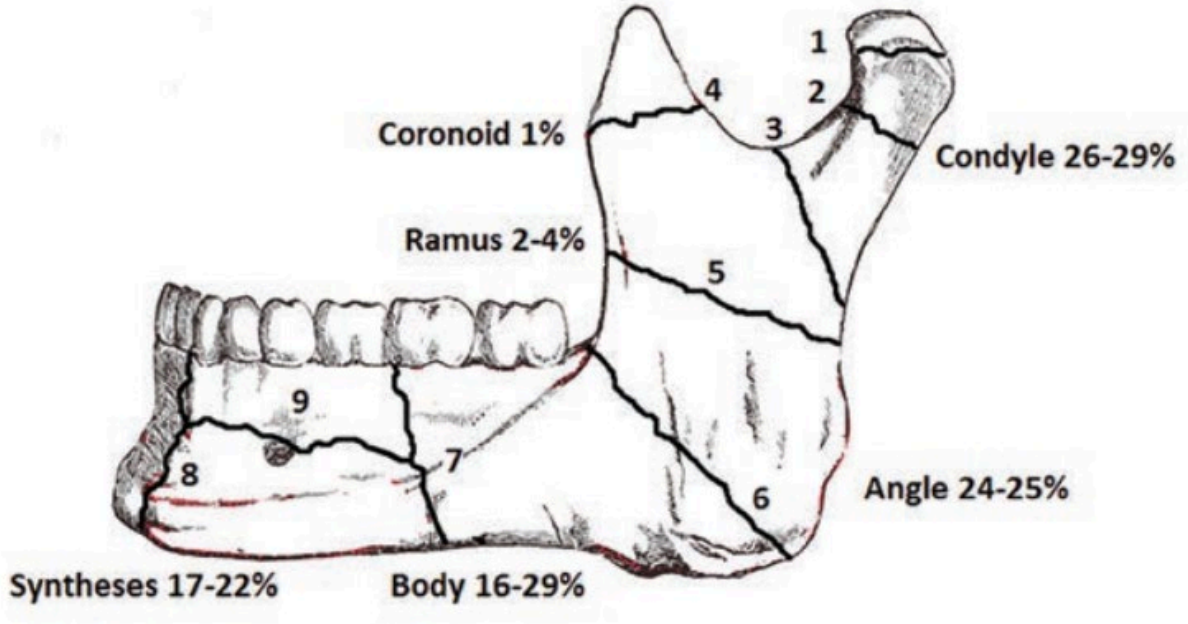
Mandibular Anatomy



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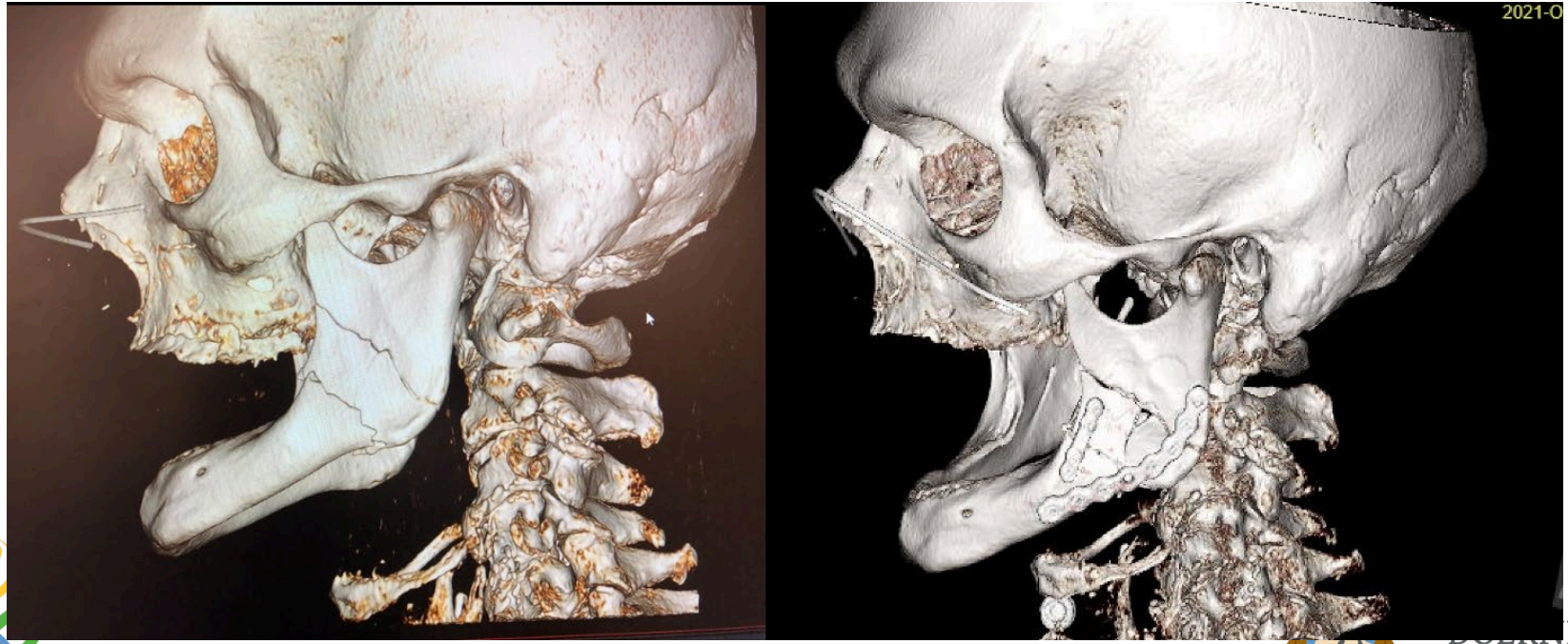
Mandibular Anatomy



Examine the patient

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Get The story

- mechanism
- pain
- numbness
- diplopia
- malocclusion
- trismus

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Observe the face

- symmetry
- facial width
- facial paralysis
- malar position
- canthal position
- scleral hematoma
- ecchymosis
- swelling

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Motor exam

- Raise your brows.

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Motor exam

- Close your eyes tight

Motor exam

- Open your eyes wide.

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Motor exam

- Extra-ocular movements
- Follow my finger.

Courtesy of Dr. Reid Mueller

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Motor exam

- smile

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Motor exam

Bite down and show me your teeth.

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Motor exam

Open wide

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Sensation exam

- Touch both sides of...
- forehead
- cheeks
- lower lip

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Palpate the face

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Palpate the face

Remember to palpate inside the mouth

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Parotid Duct

- at risk along the middle third of a line from tragus to middle of upper lip.
- at risk where it traverses over the masseter

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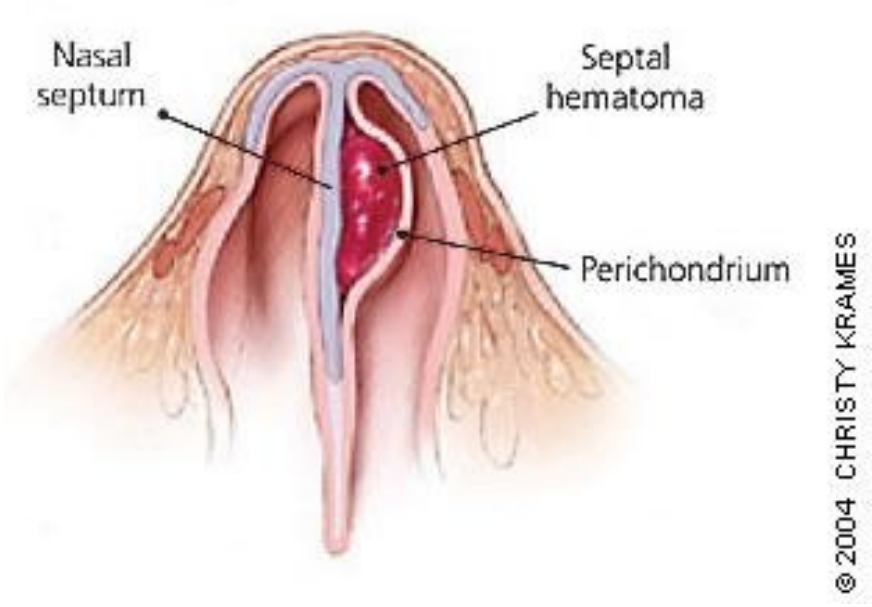
Septal Hematoma



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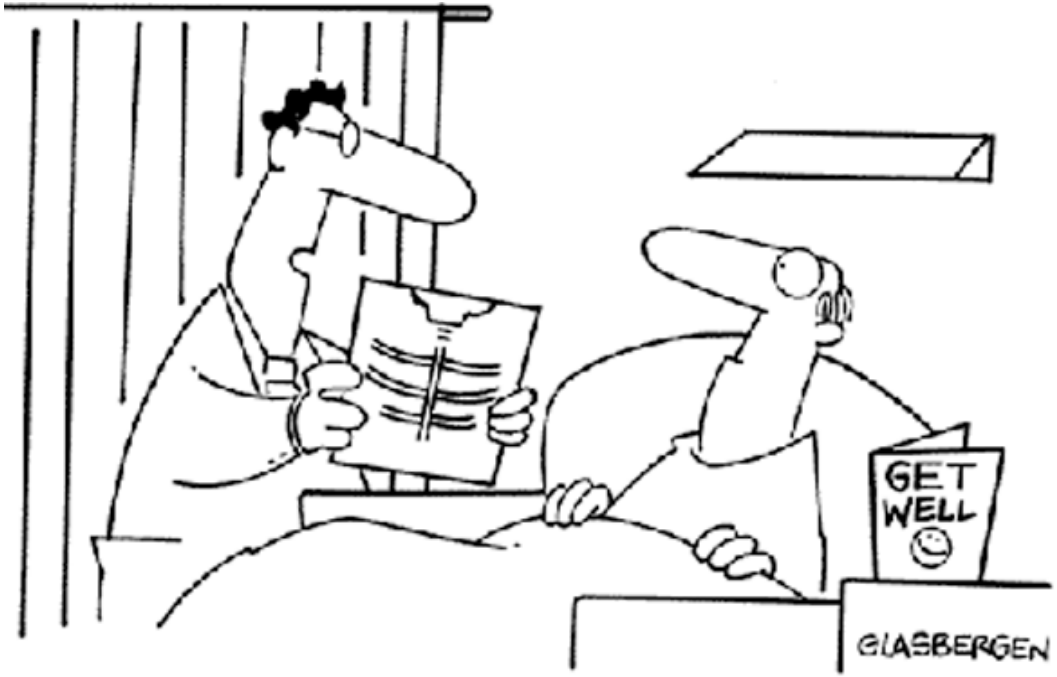
Auricular Hematoma

Courtesy of Dr. Reid Mueller

Imaging?



"Your x-ray showed a broken condyle
but we fixed it with Photoshop"

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Imaging

- Gold standard in imaging
- Maxillofacial CT
- 1-3mm cuts
- Allows for later 3D reconstruction and modeling if needed

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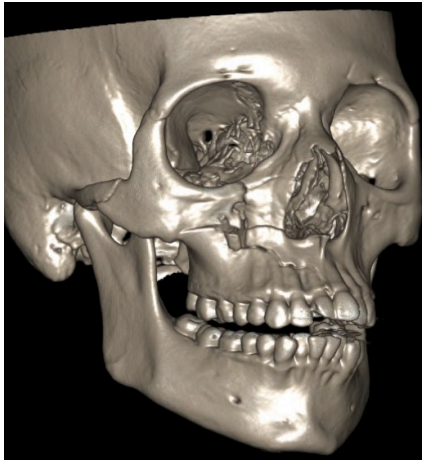
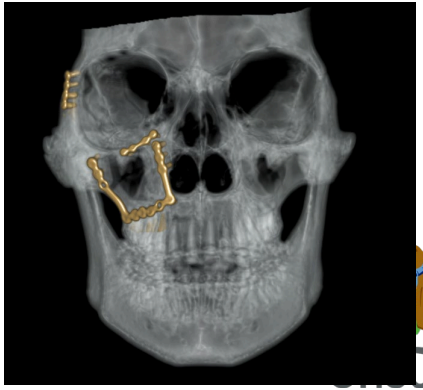
Timing

- Emergency?
- 72 hrs?
- Weeks?





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Emergencies

- True orbital entrapment
- Salvable soft tissue

Amputations

-ear

-nose

-scalp

24hrs

- Septal hematoma
- Auricular hematoma

Courtesy of Dr. Reid Mueller

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OR within 72hrs

- Facial Nerve injury

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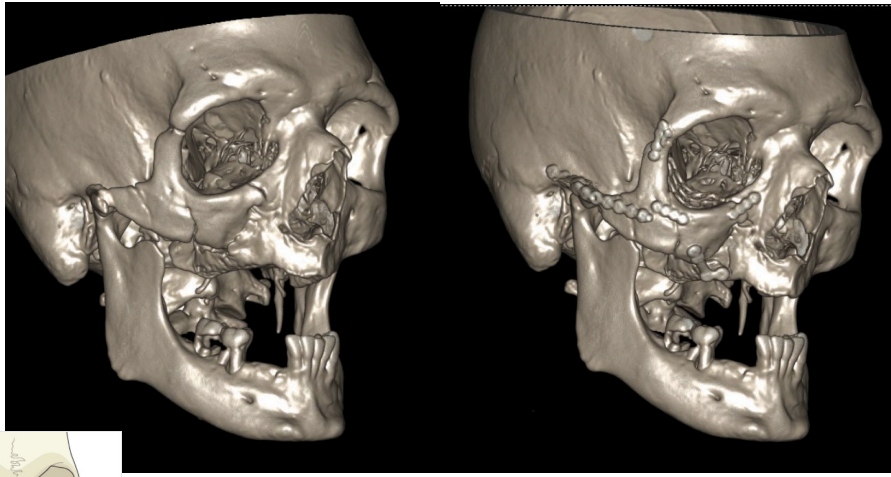
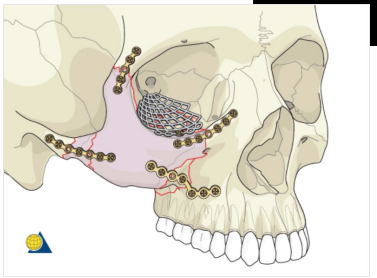
OR within 1-2 weeks

- Almost all facial fractures
- Should have specialist follow up within a few days
- Should have definitive repair within 7-14 days





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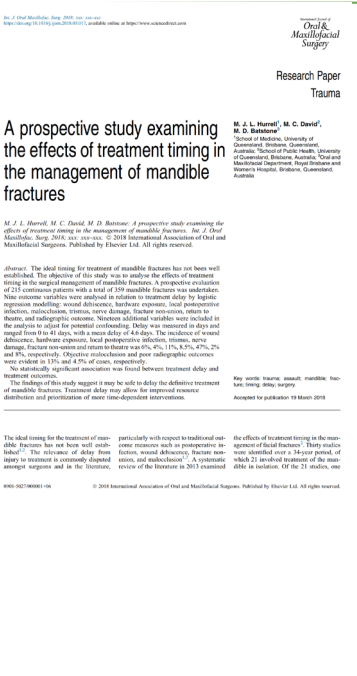
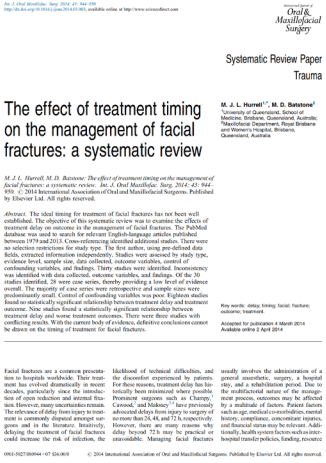
Its ok to wait

- Surgeons like to wait for swelling to resolve about 7-10 days, orbit maybe longer
- Head injuries and other life threatening traumas often preclude craniofacial repair



Research Paper
Trauma

A prospective study examining the effects of treatment timing in the management of mandible fractures



Systematic Review Paper
Trauma

The effect of treatment timing on the management of facial fractures: a systematic review

Hurrell, M. J. L., M. C. David and M. D. Batstone (2018). "A prospective study examining the effects of treatment timing in the management of mandible fractures." Int J Oral Maxillofac Surg.

Hurrell, M. J. and M. D. Batstone (2014). "The effect of treatment timing on the management of facial fractures: a systematic review." Int J Oral Maxillofac Surg 43(8): 944-950.

Pediatric Dog Bite

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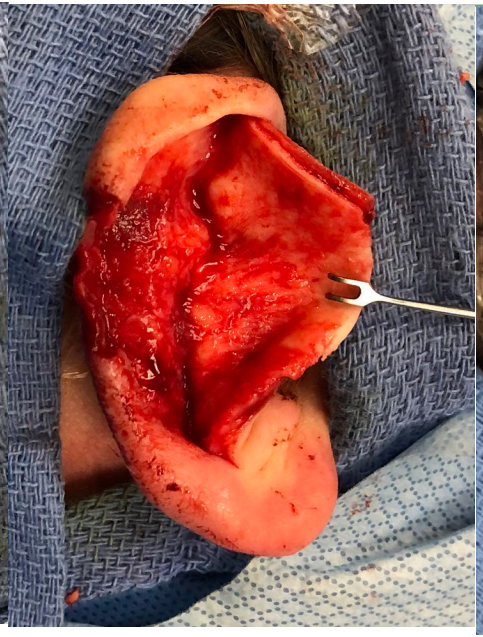
Adult Dog Bite

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Adult- Soft Tissue Facial Trauma

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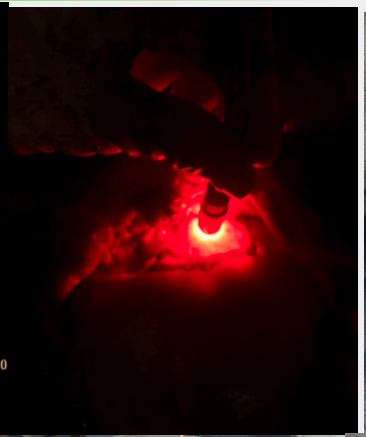
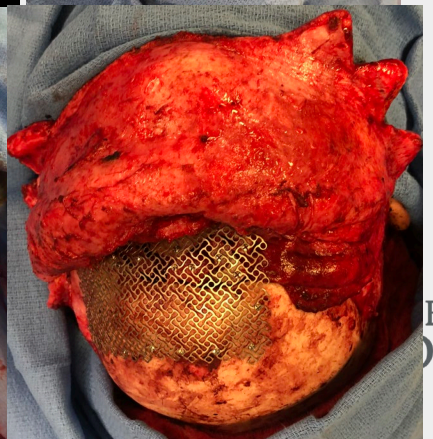
Adult- Bony Facial Trauma





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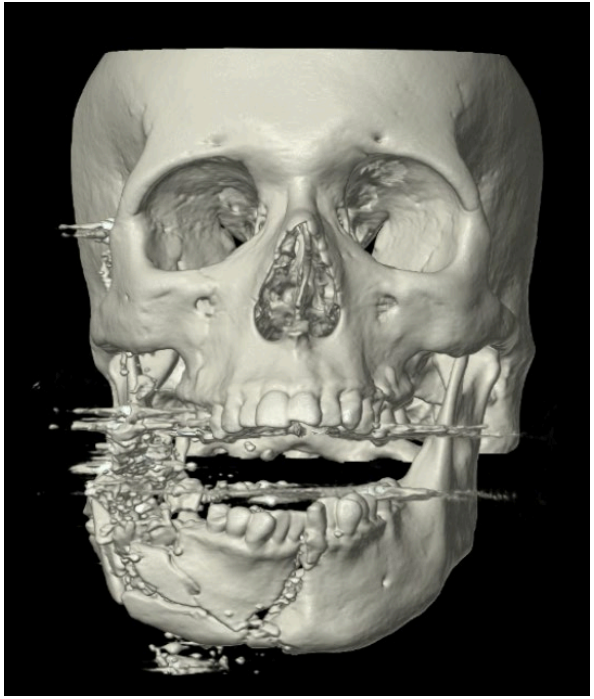

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Questions & Feedback

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Thank you

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