AMSER Case of the Month

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62-year-old female year-old-female presenting after high-speed motor vehicle collision

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Patient Presentation

- The patient was non-responsive with trauma to the face and an open left lower extremity fracture
- Physical Examination:
  - Intubated and sedated
  - Periorbital edema and ecchymoses
  - Lacerations to chin and nose s/p closure by plastic surgery
  - Blood in oropharynx, gross mobility of maxilla and mandible including multiple dentoalveolar segments on manipulation

Pertinent Labs

- pH arterial: 7.19, PCO2 50, Bicarb 17
- Lactate 9.2
- WBC 20.33
- Hb 11.5
- Creatine Kinase 951
- Troponin 95
- Glucose 344
- Urinalysis: >180 RBCs

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Scenario	Scenario ID	Procedure	Adult RRL	Peds RRL	Appropriateness Category
Major blunt trauma, hemodynamically stable, facial injury suspected, initial imaging	3164892	Radiography trauma series	1-10 mSv ☢☢☢		Usually appropriate
		CT maxillofacial without IV contrast	0.1-1mSv ☢☢	0.3-3 mSv [ped] ☢☢☢	Usually appropriate
		CT head without IV contrast	1-10 mSv ☢☢☢	0.3-3 mSv [ped] ☢☢☢	Usually appropriate
		CTA head and neck with IV contrast	1-10 mSv ☢☢☢	3-10 mSv [ped] ☢☢☢☢	Usually appropriate
		CT whole body with IV contrast	10-30 mSv ☢☢☢☢		Usually appropriate
		CT whole body without IV contrast	10-30 mSv ☢☢☢☢		May be appropriate
		MRI head without IV contrast abbreviated	0 mSv O	0 mSv [ped] O	Usually not appropriate
		CT maxillofacial with IV contrast	0.1-1mSv ☢☢	0.3-3 mSv [ped] ☢☢☢	Usually not appropriate
		CT head with IV contrast	1-10 mSv ☢☢☢	0.3-3 mSv [ped] ☢☢☢	Usually not appropriate
		CT head without and with IV contrast	1-10 mSv ☢☢☢	3-10 mSv [ped] ☢☢☢☢	Usually not appropriate

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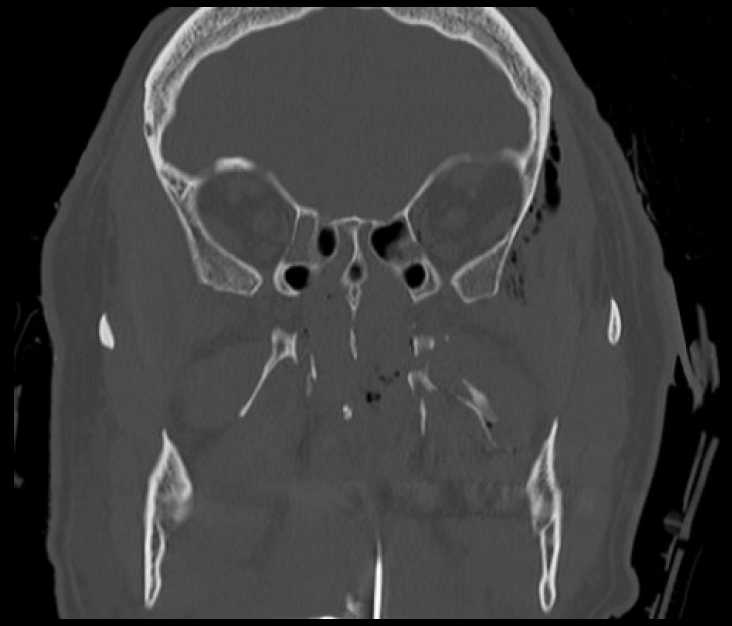
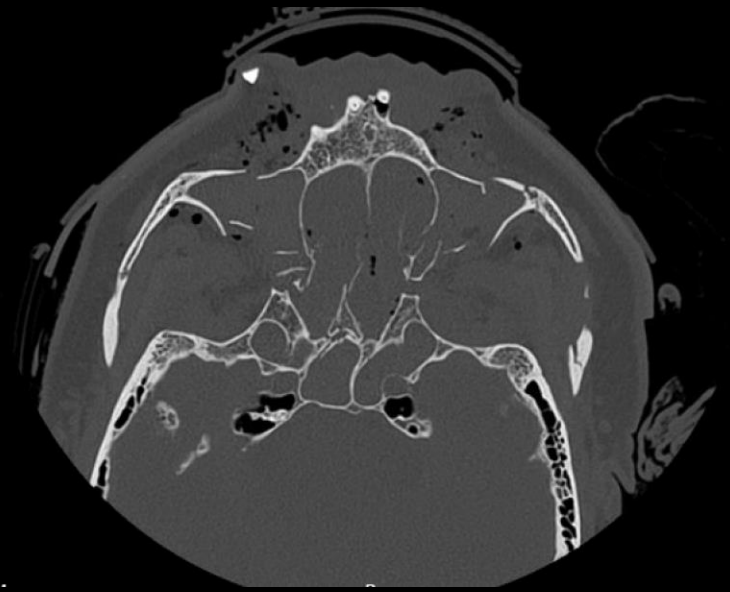
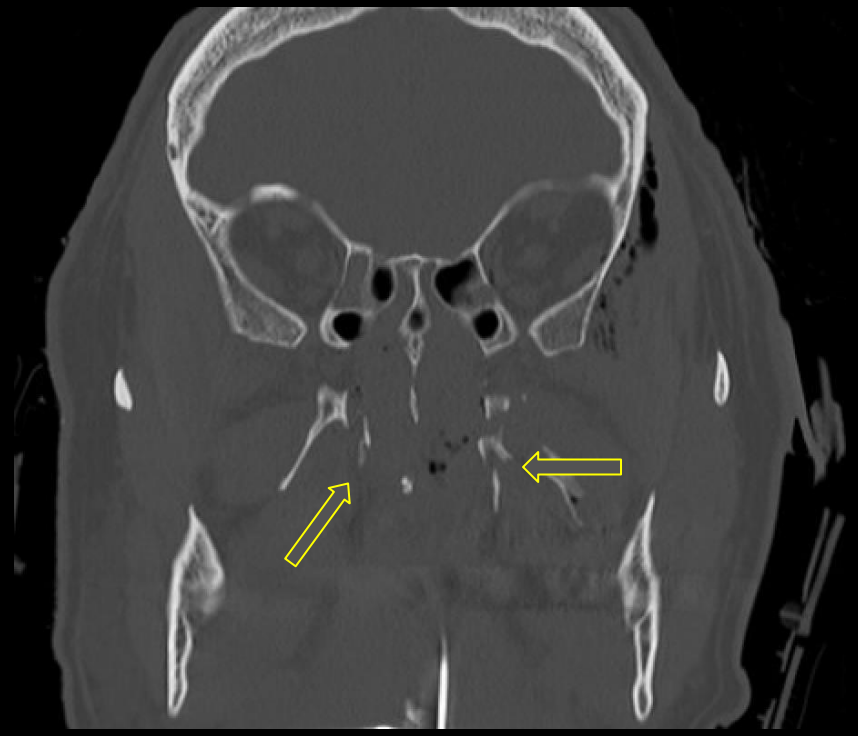
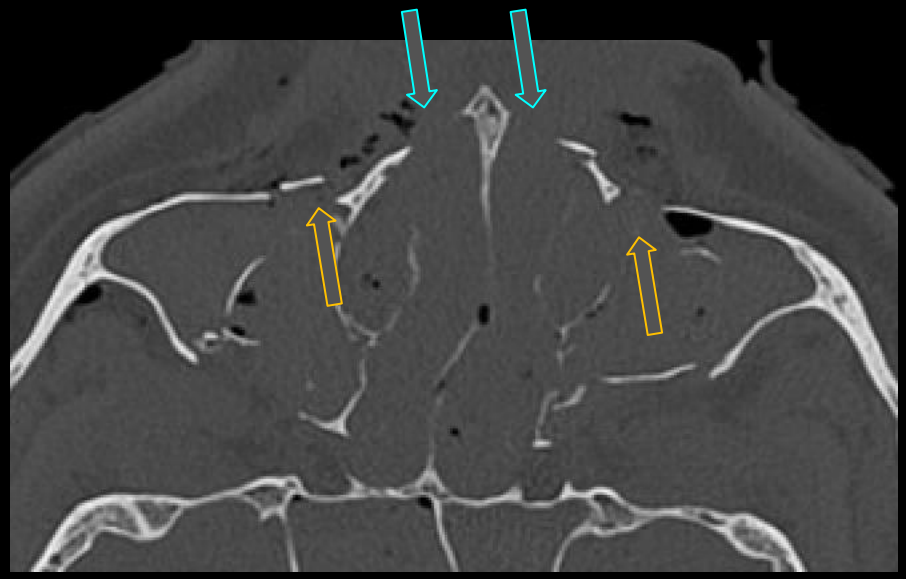
Findings





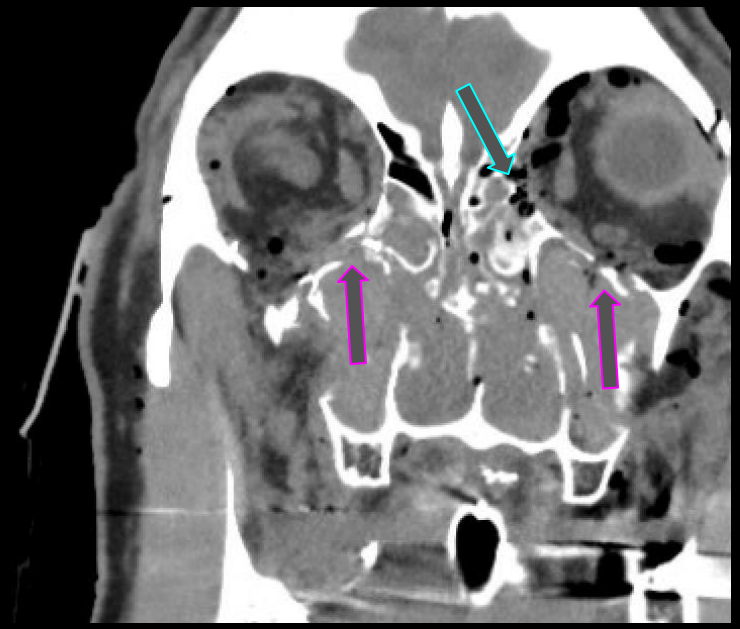
Findings - LeFort I

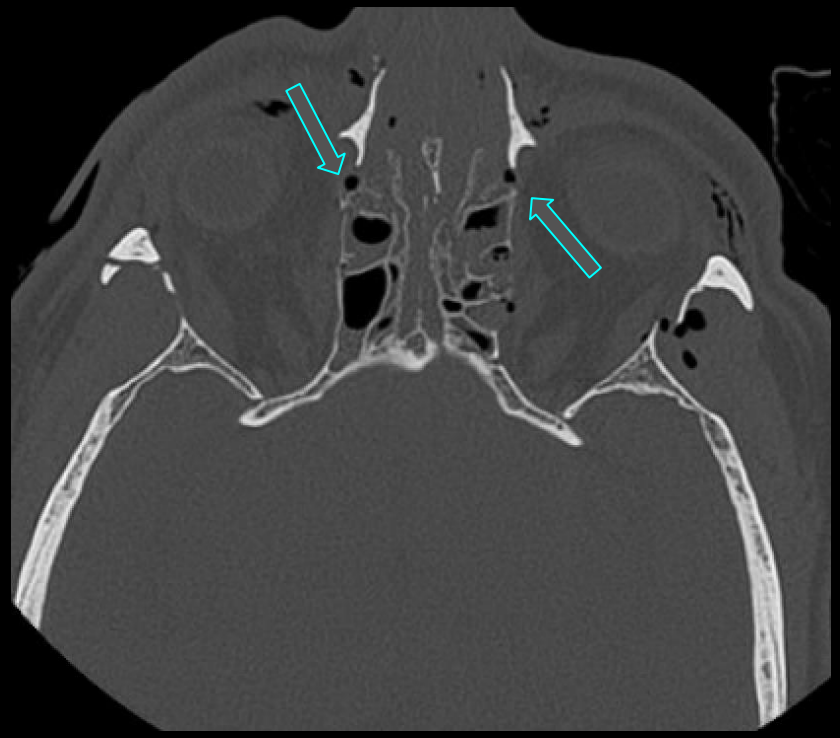




Bilateral LeFort I fractures of the bilateral pterygoid plates (yellow arrows), fractures of the bilateral frontal processes of the maxilla (blue arrows), and fractures of the anterior walls of the bilateral maxillary sinuses (orange arrows)

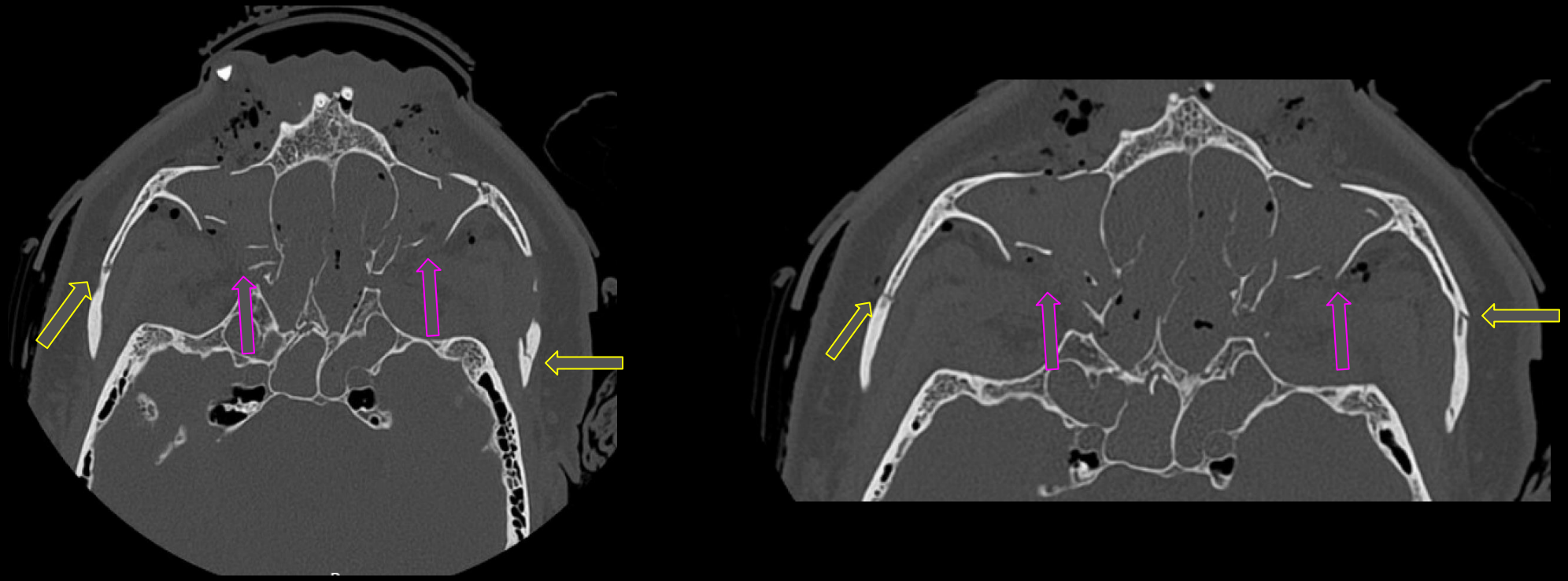
Findings - LeFort II





Bilateral LeFort II fractures of the inferior orbital rims (pink arrows) and medial orbital walls (blue arrows)

Findings - LeFort III



Bilateral LeFort III fractures with fractures of the zygomatic arches (yellow arrows) and posterior maxillary sinus walls (pink arrows)

Final Dx:

Bilateral LeFort fractures I, II and III

Additional Injuries

- Additional injuries included a parasymphseal mandibular fracture treated with bridle wire (arrow; image on the right), a subdural hematoma, an intraparenchymal hemorrhage (image on the left), and fractures of the right tibia, humerus, and pelvis

Case Discussion

- LeFort I
  - Transverse fracture originating at the anterolateral margin of the nasal fossa, travels laterally through the medial, inferior, and lateral maxillary sinus wall, and terminates at the pterygoid plate
- LeFort II
  - Pyramid shaped fracture beginning at the nasal bone and frontal process of the maxilla that extends in a posterior inferior direction to the medial aspect of the orbit, travels through the inferior wall of the orbit, and continues posteriorly above the hard palate through the pterygoid plate
- LeFort III
  - Complete separation of mid face from cranial base that begins at the nasofrontal suture and frontal bone at the skull base, travels posteriorly through the ethmoid sinuses, traverses the medial and lateral orbital walls, crosses the zygomatic arch, and involves the pterygoid plate

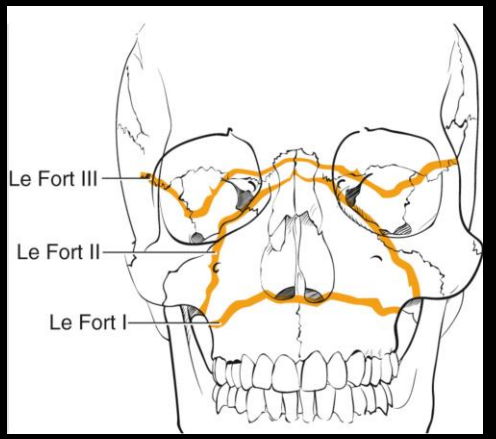


Figure 1: Visual representation of LeFort fractures I, II, and III [8]

Case Discussion

- CT scan is the best imaging modality to diagnose facial bone fractures
- CT facial bone findings of LeFort I fractures can include fracture of the anterolateral margin of the nasal fossa, maxillary sinus wall, and pterygoid bone
- CT facial bone findings of LeFort II fractures can include fractures of the inferior orbital wall, nasal bone, frontal process of the maxilla, and pterygoid bone
- CT facial bone findings of LeFort III fractures can include fracture of the zygomatic arch, lateral orbital wall, and pterygoid bone
- By definition, all LeFort fractures (I, II, or III) involve a fracture of the pterygoid plates

References

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