AMSER Case of the Month October 2025

35 y.o. female patient with no relevant past medical history presents to the emergency room after falling onto the left side of her face from an e-bike

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Patient Presentation

HPI

- 35 y.o. female who presents to the ED 30 minutes after falling from her e-bike. She was not wearing a helmet. Patient reports abrasions to the left side of her face, forearms, hands, and left hip. Patient also reports numbness and tingling in her lips. Patient denies any LOC. Patient's husband reports she was mildly confused.

Vitals

- BP 132/91, P 90, T 98.6F, RR 16, SpO2 100%

Physical Exam

- General Appearance: A&O x 3
- Neuro: GCS 15. motor function and sensation grossly intact in all extremities
- Cardiac: RRR, no murmurs, rubs, or gallops
- Pulmonary: lungs clear to auscultation bilaterally
- Head: **Tenderness to facial bones, abrasions to the left cheek and chin and eyebrow, and left periorbital swelling and ecchymosis.** No cephalohematoma
- Eyes: left conjunctivae injection. corneas clear; PERRLA, EOM's intact.
- Nose: **Tender to palpation of left nasal bridge,** no blood in nares.
- Mouth: Small laceration to the lower lip mucosa.
- Superficial abrasions to wrists and knees were also noted

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Pertinent Labs

- Hgb within normal limits
- Toxicology screen: Positive for THC

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 3: **Major blunt trauma. Hemodynamically stable. Suspected facial injury. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
CT maxillofacial without IV contrast	Usually Appropriate	☢☢
CT head without IV contrast	Usually Appropriate	☢☢☢
Radiography trauma series	Usually Appropriate	☢☢☢
CT whole body with IV contrast	May Be Appropriate (Disagreement)	☢☢☢☢
CT whole body without IV contrast	May Be Appropriate	☢☢☢☢
CT head with IV contrast	Usually Not Appropriate	☢☢☢
CT head without and with IV contrast	Usually Not Appropriate	☢☢☢
CT maxillofacial with IV contrast	Usually Not Appropriate	☢☢
CT maxillofacial without and with IV contrast	Usually Not Appropriate	☢☢☢

CT maxillofacial and CT head without contrast were ordered by the ED physician

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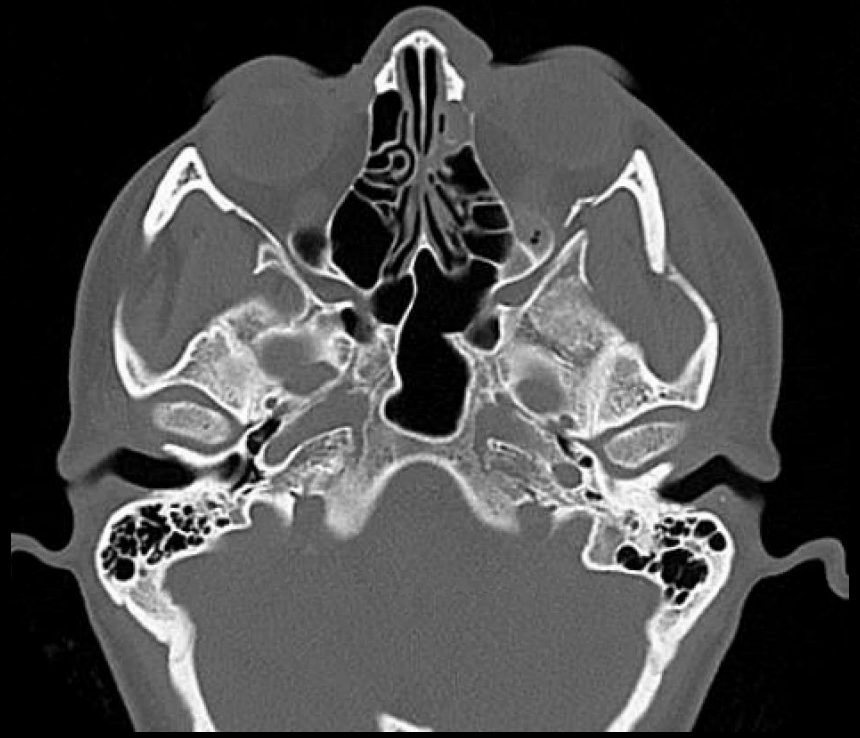
Findings (unlabeled)



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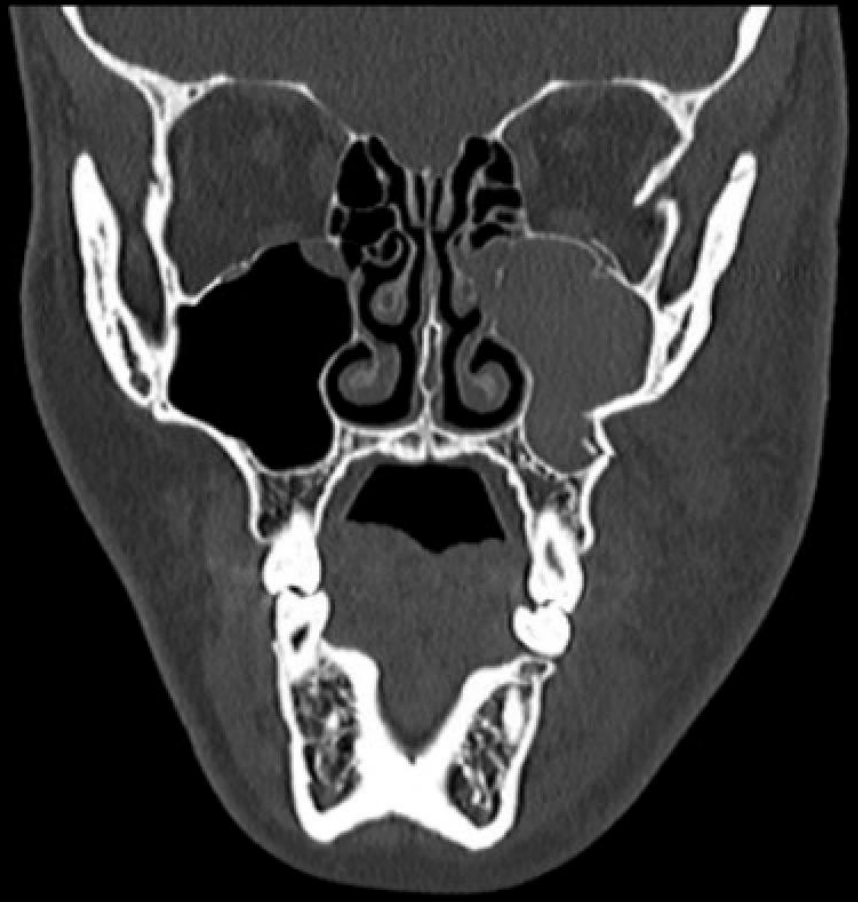

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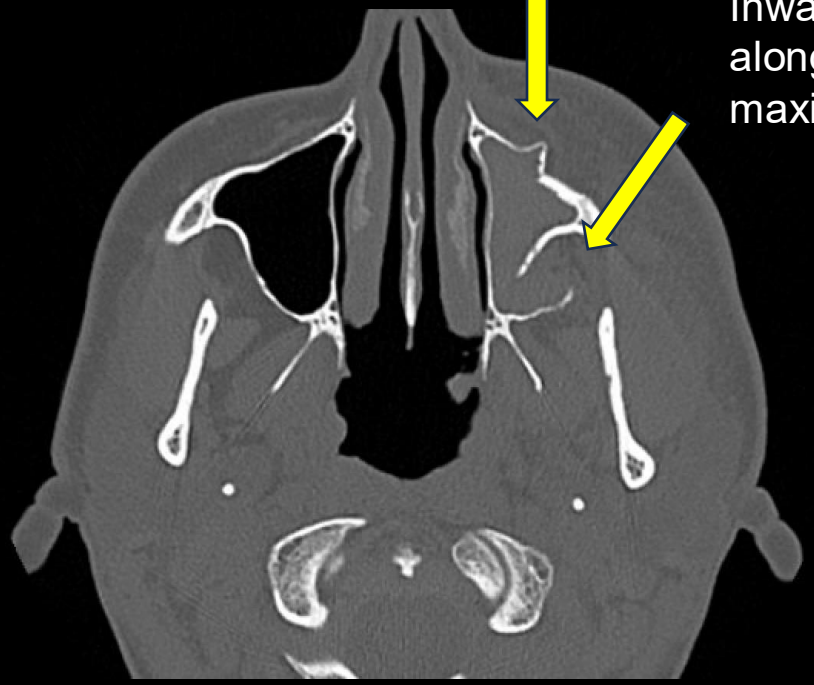
Findings (unlabeled)

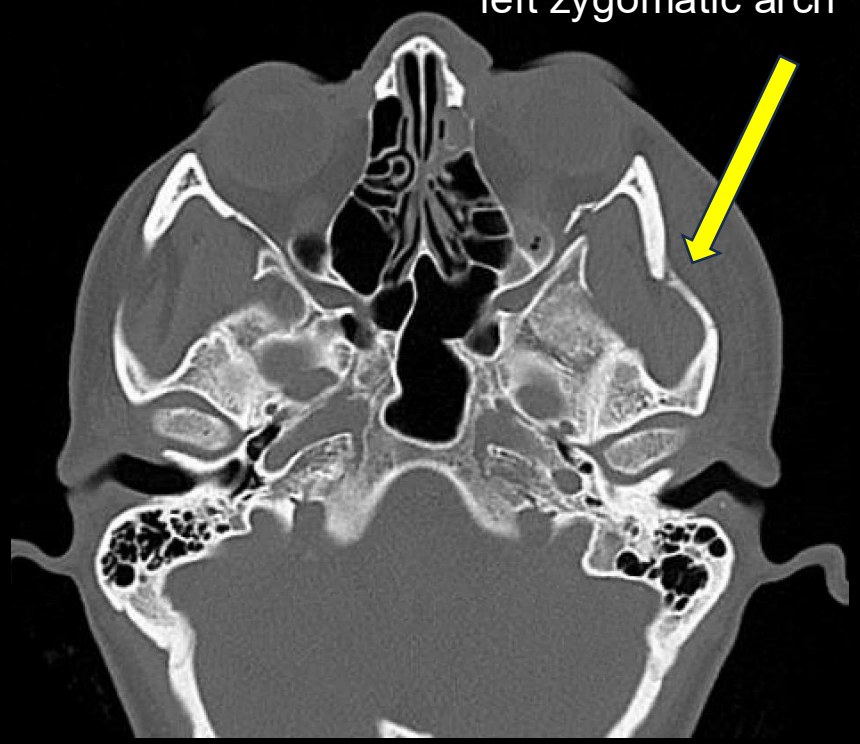
Findings (labeled)

Outwardly displaced fracture along left anterior maxillary sinus wall

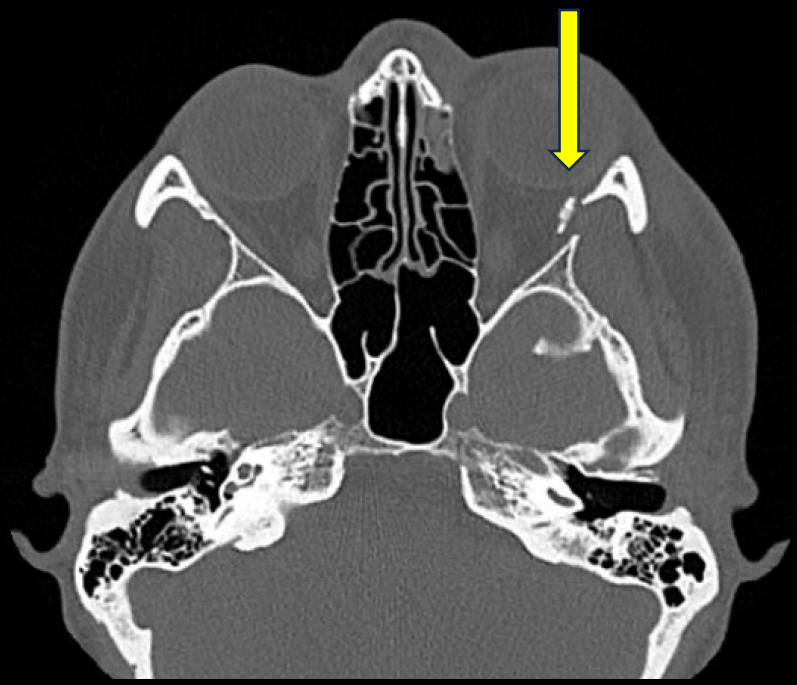


Inwardly displaced fracture along the posterior maxillary sinus wall

Depressed fracture of the left zygomatic arch



Segmental fracture of the left lateral orbital wall displace into the orbit



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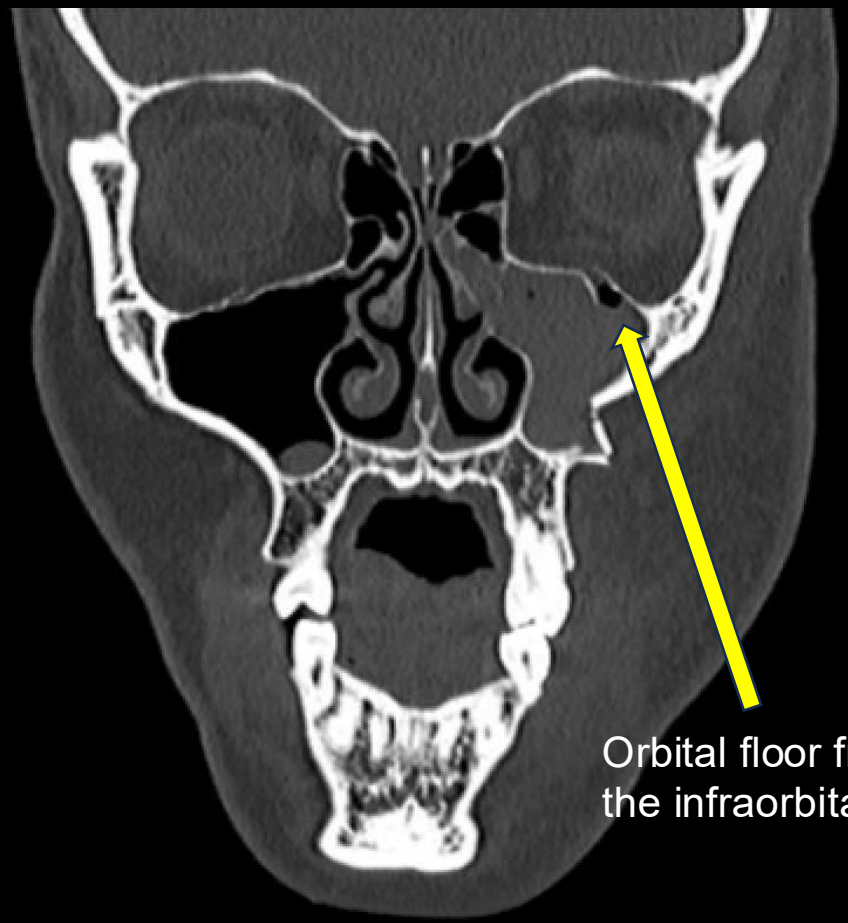
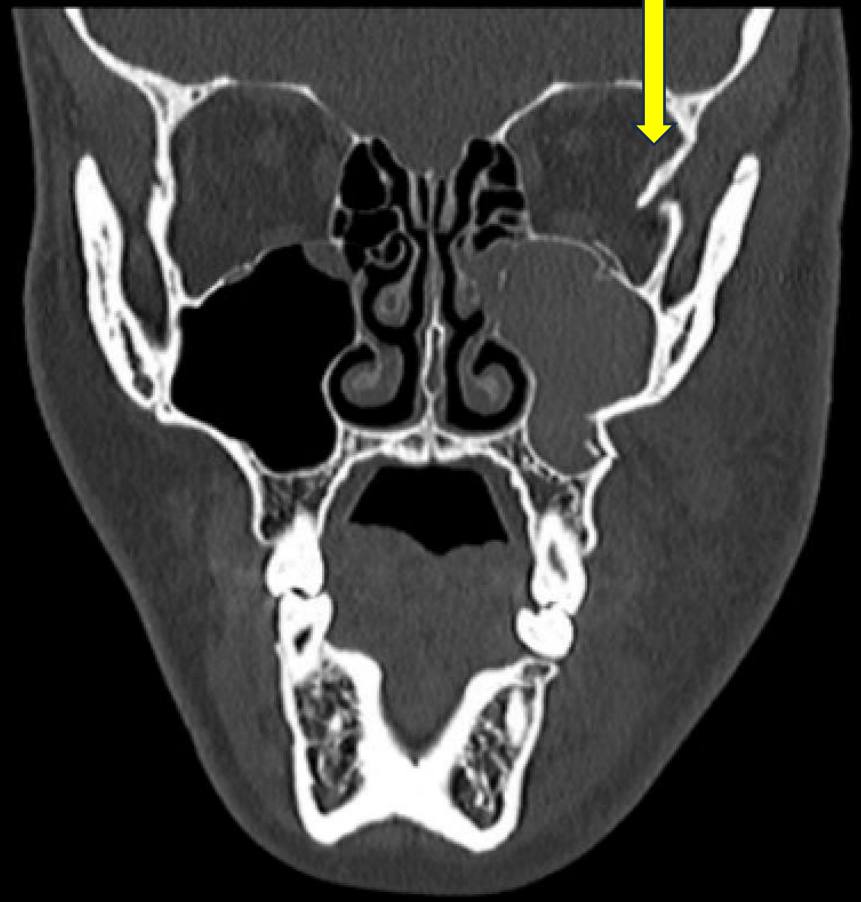
Findings (labeled)



Orbital floor fracture involving the infraorbital foramen

Left lateral orbital wall fracture (coronal view)



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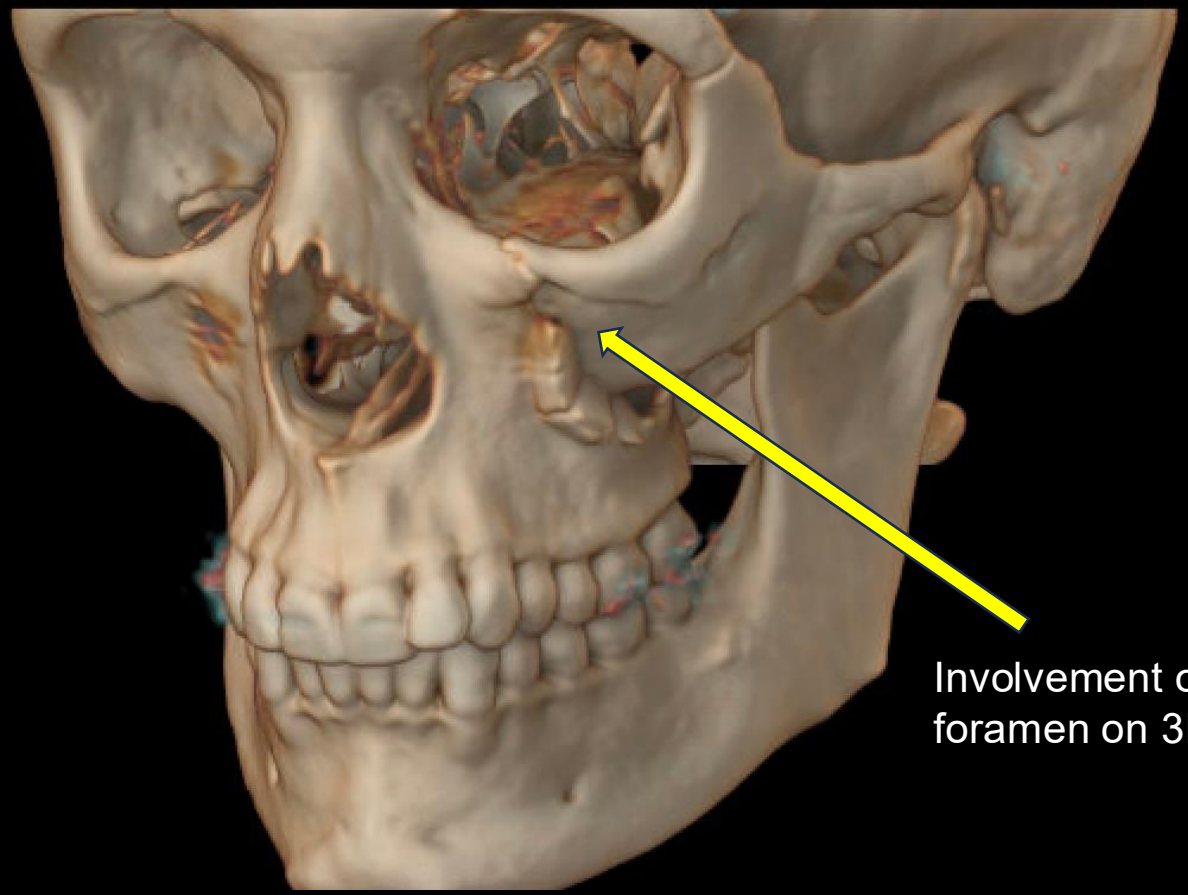
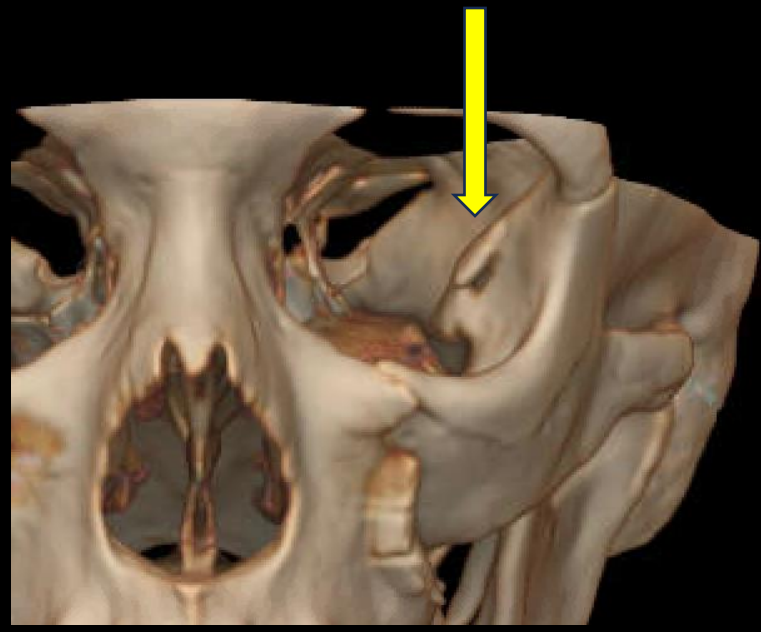


Involvement of the infraorbital foramen on 3D reconstruction

Left lateral orbital wall fracture on 3D reconstruction



Final Dx:

Zygomaticomaxillary complex (ZMC) fracture

Case Discussion

- The zygoma articular surfaces include the zygomaticofrontal suture, zygomaticosphenoid suture, zygomaticomaxillary buttress, as well as the zygomatic arch and inferior orbital rim (Birgfeld et al., 2017)
- ZMC fractures typically involve the zygomatic arch, inferior orbital rim, anterior and posterior maxillary sinus walls, and the lateral orbital rim
- ZMC fractures are the second most common facial bone fracture, after nasal bone fractures (Bergeron et al., 2024)
- Classification: (Bergeron et al., 2024)
  - Type A: incomplete zygomatic fracture involving 1 articulation of the zygoma
  - Type B: complete tetrapod fracture with the zygomatic bone remaining intact
  - Type C: the zygomatic bone is fractured in addition to all 4 articulations

Case Discussion (continued)

- There is often involvement of the infraorbital nerve (Birgfeld et al., 2017), which may explain the upper lip paresthesia reported by this patient
- Most often, treatment of ZMC fractures is conservative. However, reduction with or without fixation may be indicated for fractures involving multiple articulations or largely displaced fractures. The decision of conservative vs. surgical management is primarily based on a consideration of function and aesthetics. (Peretti et al., 2017)

References:

Peretti, Nicholas; MacLeod, Stephen. Zygomaticomaxillary complex fractures: diagnosis and treatment. Current Opinion in Otolaryngology & Head and Neck Surgery 25(4):p 314-319, August 2017. | DOI: 10.1097/MOO.0000000000000372

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