



# FACIAL (v.1) FRACTURES

# #EM3

East Midlands Emergency Medicine Educational Media

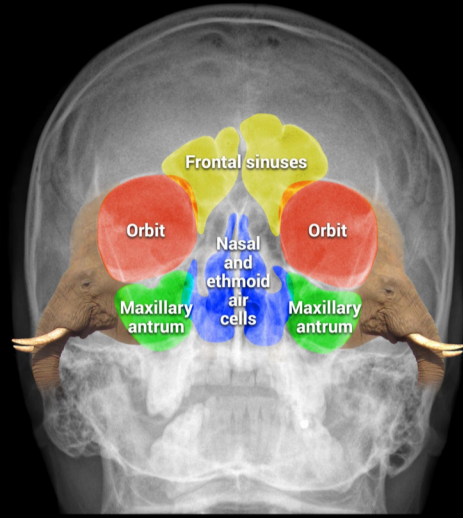
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## FACIAL X-RAY INTERPRETATION



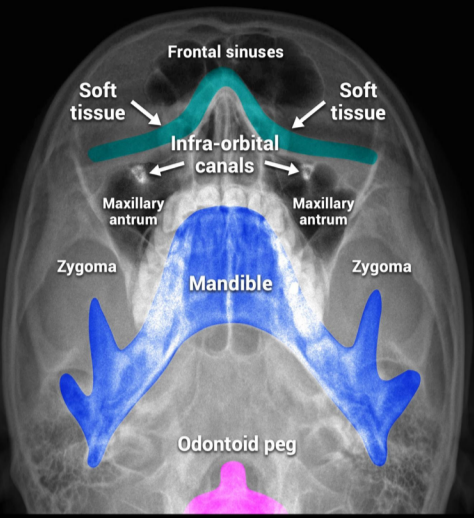
### OCCIPITOMENTAL VIEW

Provides demonstration of the upper and middle 2/3rds of the face. This includes orbital margins, frontal sinus, zygomatic arches and maxillary antra. This is at approximately 10°

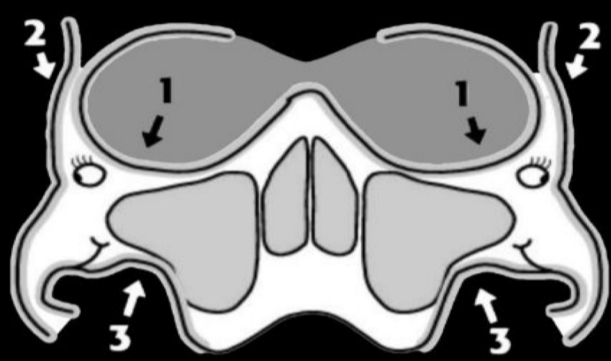


### OCCIPITOMENTAL 30° VIEW

A 30° view with caudal angulation. The zygomatic arches and the walls of the maxillary antra are seen better.



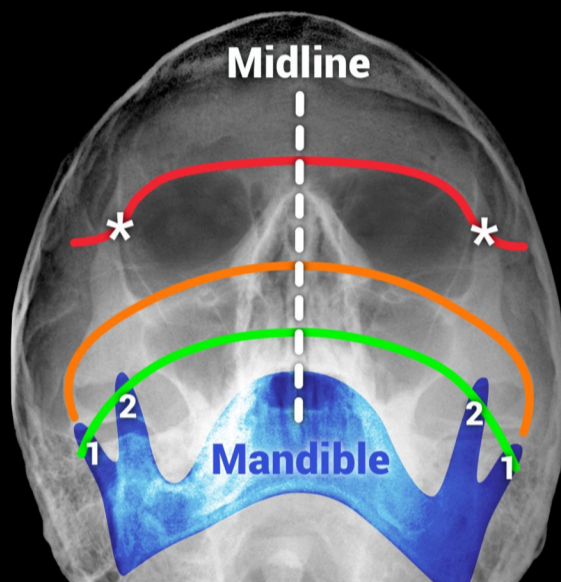
## CONSIDERATIONS WHEN REVIEWING X-RAY



### DOLAN'S LINES

THREE LINES to aid evaluation in maxillofacial fractures on an occipitomental (OM) skull x-ray:

- ORBITAL line** traces the inner margins of the lateral, inferior, medial orbital walls, and the nasal arch.
- ZYGOMATIC line** traces the superior margin of the zygomatic arch and body, extending along the frontal process of the zygoma to the zygomaticofrontal suture.
- MAXILLARY line** traces the inferior margin of the zygomatic arch, body, buttress, and the lateral wall of the maxillary sinus. Lines 2 + 3 form "Dolan's elephant".



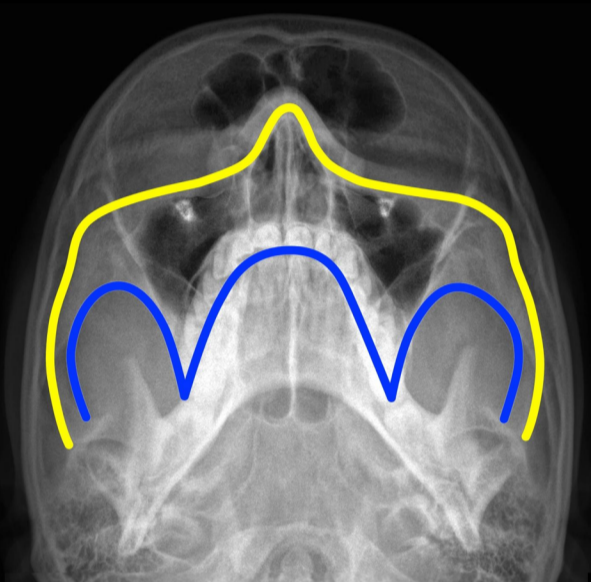
### MCGRIGOR-CAMPBELL LINES

**RED line:** Passes through the zygomaticofrontal sutures (\*asterisks) and across the upper edge of the orbits.

**ORANGE line:** Follows the zygomatic arch (elephant's trunk), crosses the zygomatic bone and follows in inferior orbital margins to the opposite side.

**GREEN line:** Passes through condyle (1) and coronoid process (2) of the mandible and through the lateral and medial walls of the maxillary antra.

**WHITE dotted midline:** Used to assess symmetry.

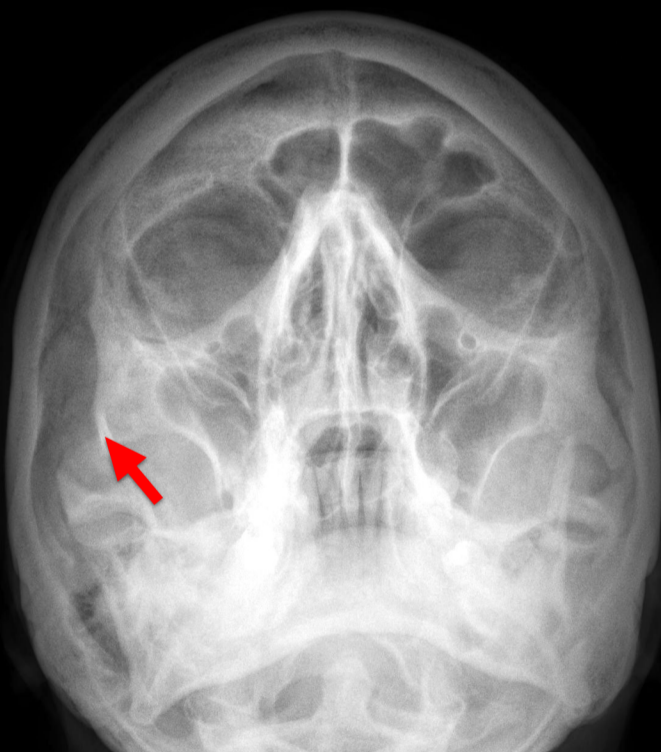


### OCCIPITOMENTAL 30° VIEW

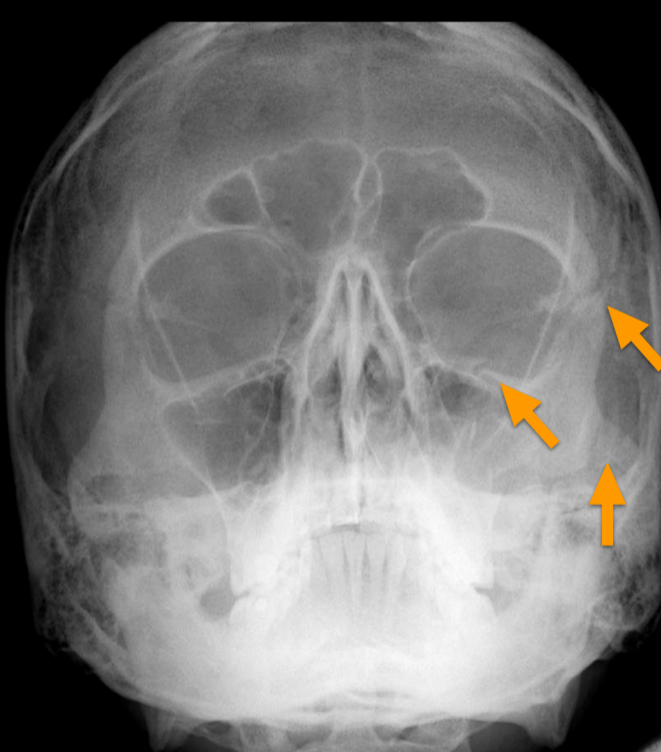
**YELLOW line:** Look for fractures of the superior aspect of the zygomatic arch. Fractures of the inferior rim of the orbits. Soft tissue shadow in the superior maxillary antrum. Fractures of the nasoethmoid bones and medial orbits.

**BLUE line:** Look for fractures of the inferior aspect of the zygomatic arch. Fractures of the lateral maxillary antrum. Opacification/air-fluid level in the maxillary sinuses. Fractures of the alveolar ridge.

## IDENTIFYING COMMON INJURIES

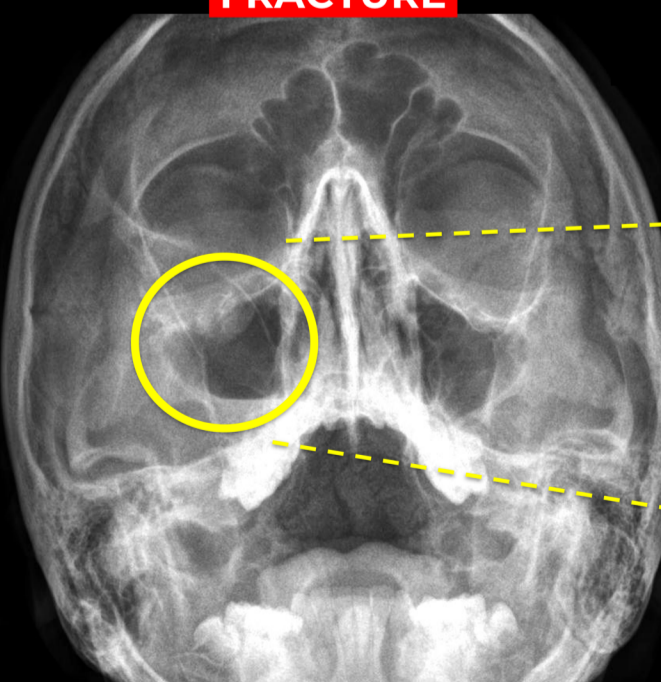


### RIGHT ZYGOMATIC ARCH FRACTURE



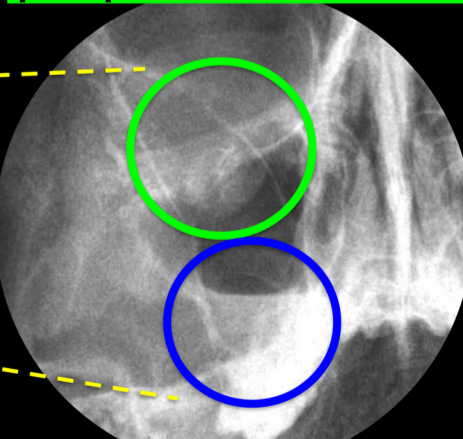
### TRIPOD FRACTURE

- Widening of the zygomaticofrontal suture.
- Fracture of the zygomatic arch.
- Fracture of the inferior orbital rim extending through the anterior and lateral walls of the maxillary antrum.



### BLOWOUT ORBITAL FLOOR FRACTURE WITH TEARDROP SIGN

**Teardrop sign:** shows prolapsed orbital contents



**Fluid level in maxillary sinus**



### ORBITAL EMPHYSEMA

#### REFERENCES:

Case courtesy of Dr Chris O'Donnell, Radiopaedia.org, rID: 19329  
Case courtesy of Dr Nikos Karapasias, Radiopaedia.org, rID: 25645

