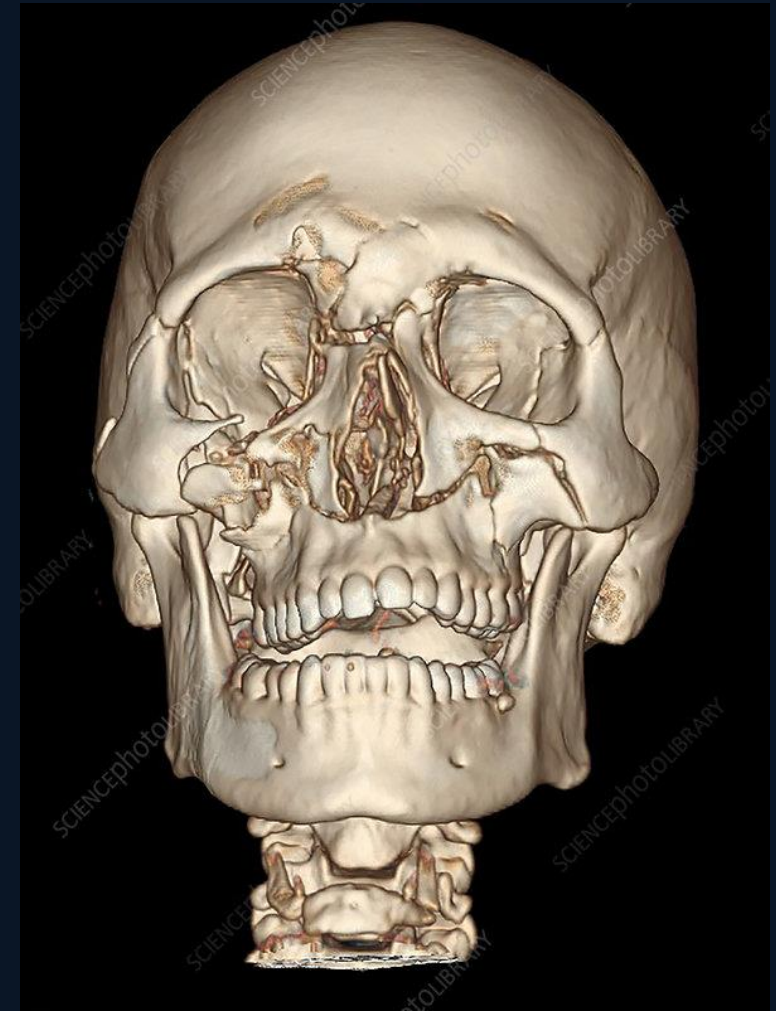


Fractures and Assessment of the Injured Patient

James Cunningham
Specialty Doctor in Oral and Maxillofacial Surgery
Ulster Hospital

45 MIN • CORE TRAINEE TEACHING



Aims

01 Common facial fractures

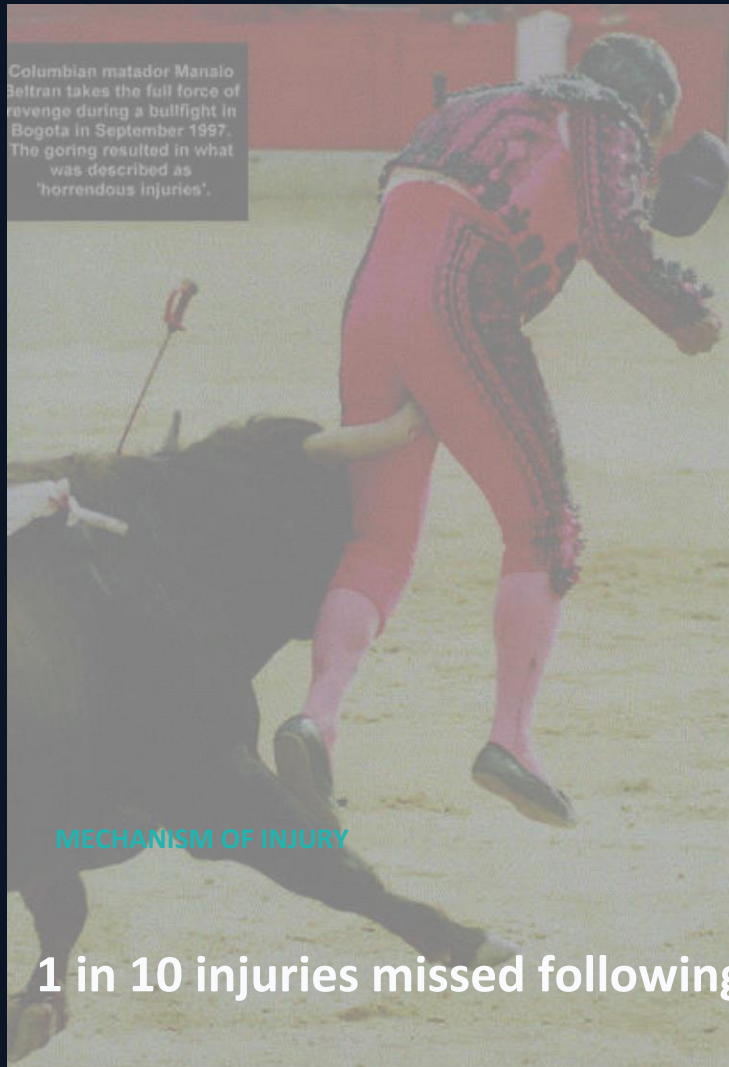
02 Signs of fracture

03 Assessment (radiographs)

04 Classification

05 Management

Columbian matador Manolo Beltran takes the full force of revenge during a bullfight in Bogota in September 1997. The goring resulted in what was described as 'horrendous injuries'.



MECHANISM OF INJURY

1 in 10 injuries missed following polytrauma, notably to the back.

importance in ATLS



OTHER INJURIES



Mandible

Common signs and symptoms:

- Change in bite
- Restricted mouth opening
- Mobility
- Numb lower lip
- Sublingual haematoma



Mandibular views

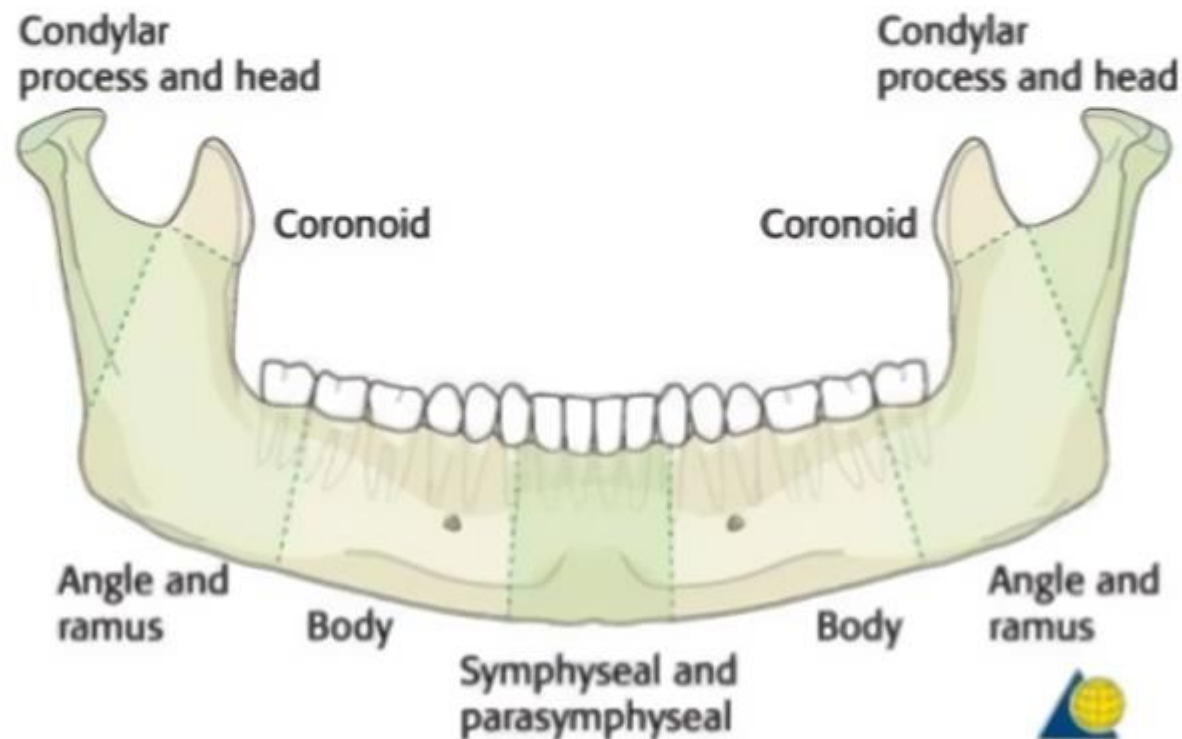
Minimum 2 views at 90 degrees

Must see condyles

Multiple fractures are common



CLASSIFICATION OF MANDIBULAR FRACTURES



Examples of OPT and PA mandible



OPT



PA mandible

OPT / PA vs CT Mandible



Can miss fractures on any modality

Common fracture patterns are common

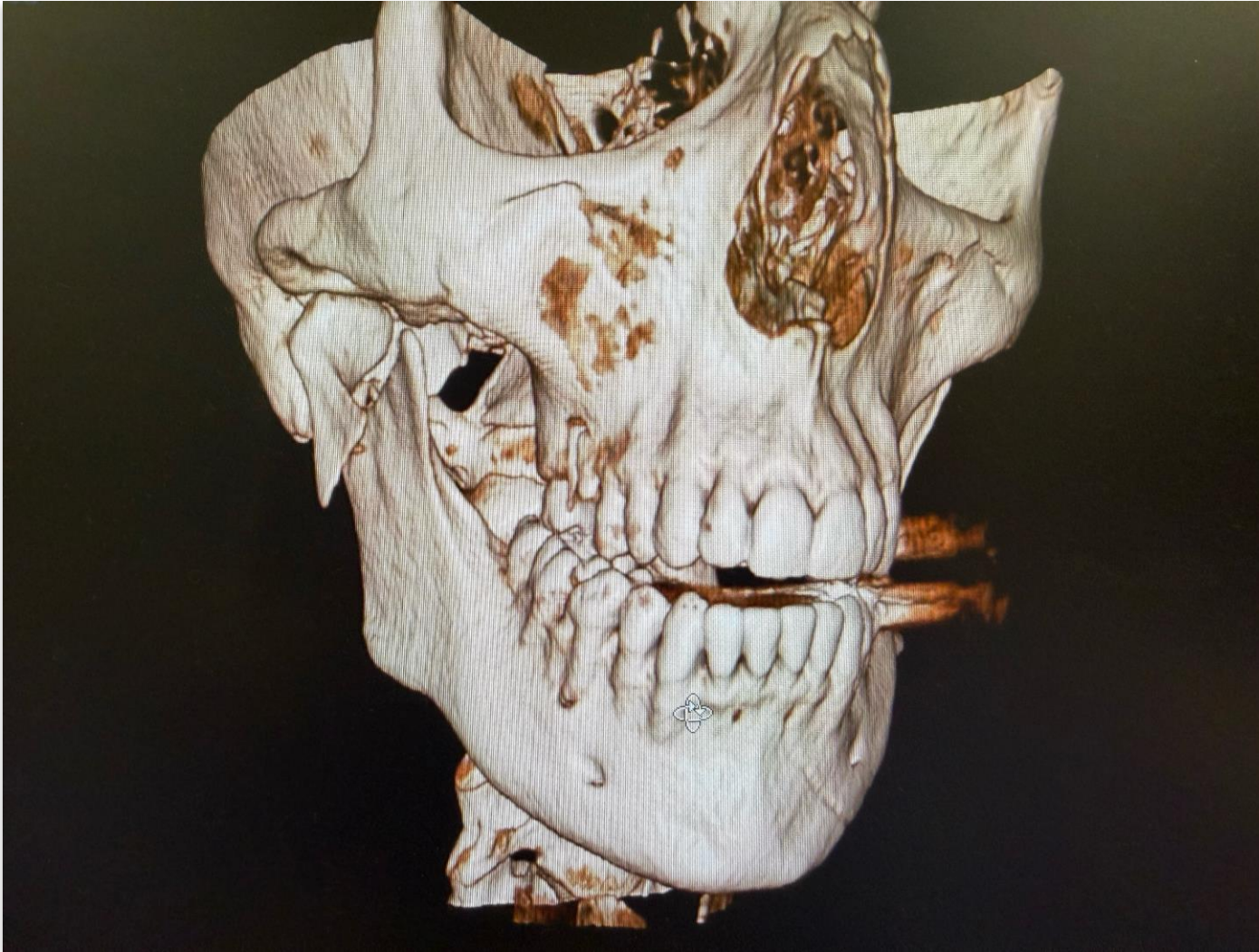
OPT / PA vs CT Mandible



Can miss fractures on any modality

Condyle right side not visible on OPT

OPT / PA vs CT Mandible



Can miss fractures on any modality

What about right angle?

OPT / PA vs CT Mandible



Can miss fractures on any modality

Lingual plate fracture only

Management in practice



OLD SLIDE

**Wire IMF for left condyle +
plating of right
parasymphysis**

**Now mostly use IMF screws
/ hybrid**

13. Zygoma – Anatomy



Zygoma

Malar

Tripod

Cheek

Crumple Zone

- Absorbs impact
- Protects the brain



14. Zygoma – The Eye Takes Priority

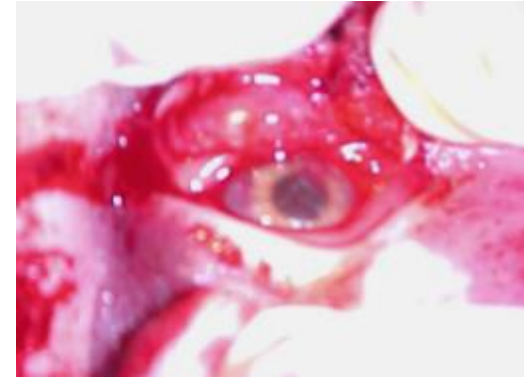


- Ensure visual acuity is checked and recorded.
- Assess for diplopia or restriction of movement.
- The zygoma makes up part of the orbit.

THE EYE TAKES PRIORITY

EYE INJURIES ALWAYS TAKE PRIORITY

- **Change in acuity indicates need for ophthalmology assessment**
- **Significant ocular injury often means that orbital fracture repair is delayed rather than risk further sight threatening injury during surgery**
- **Role for post traumatic reconstruction**



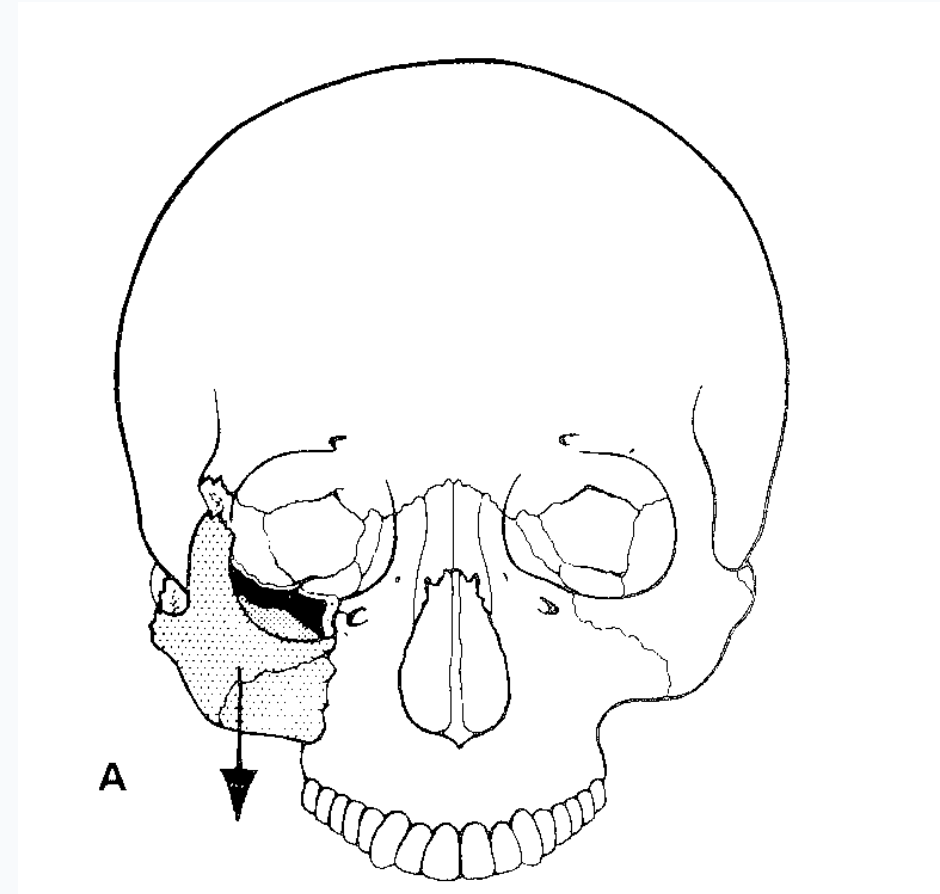
What are we trying to restore?

FUNCTION

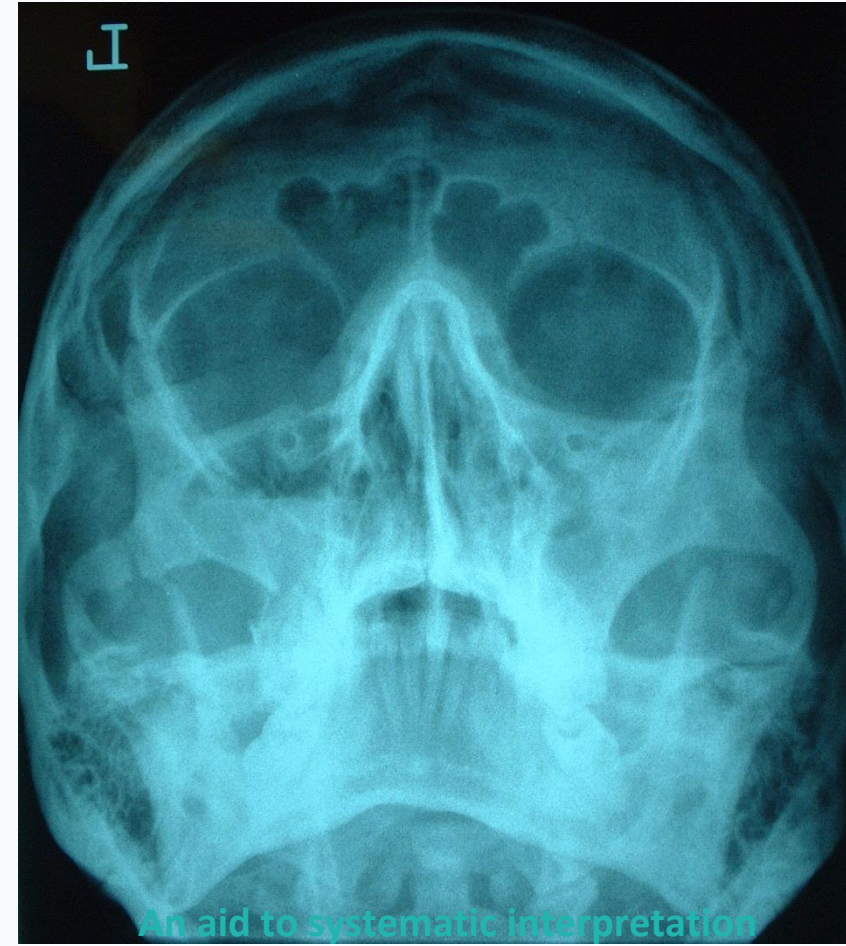
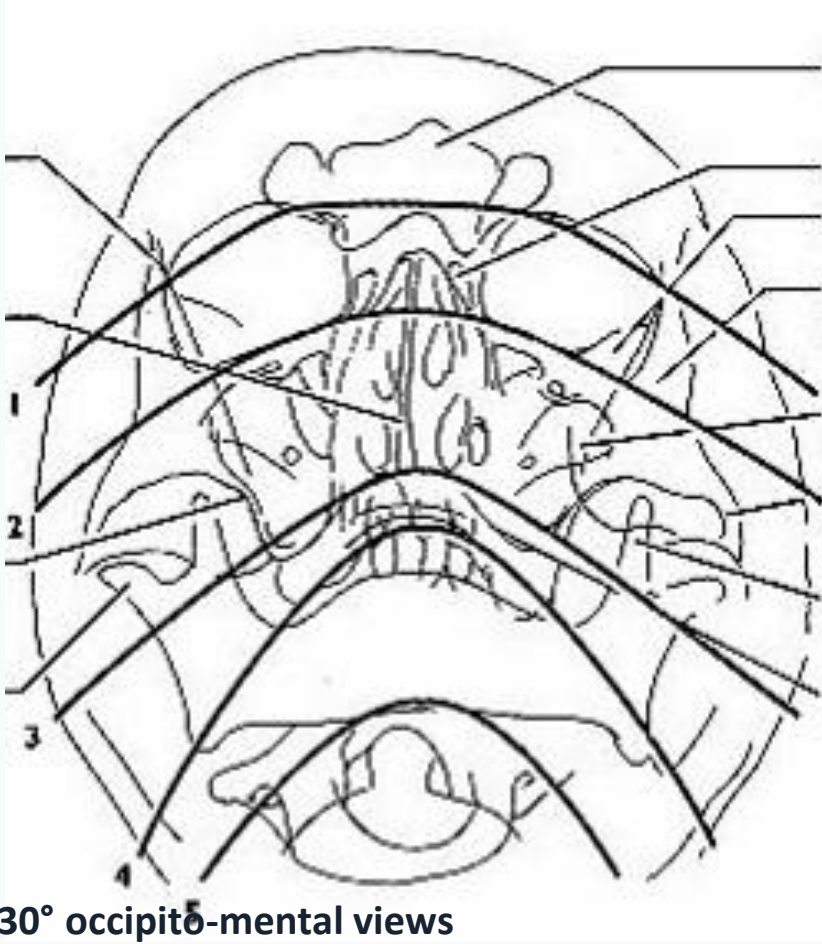
- Double vision
- Eyelid support
- Numbness
- Mouth opening

COSMETIC

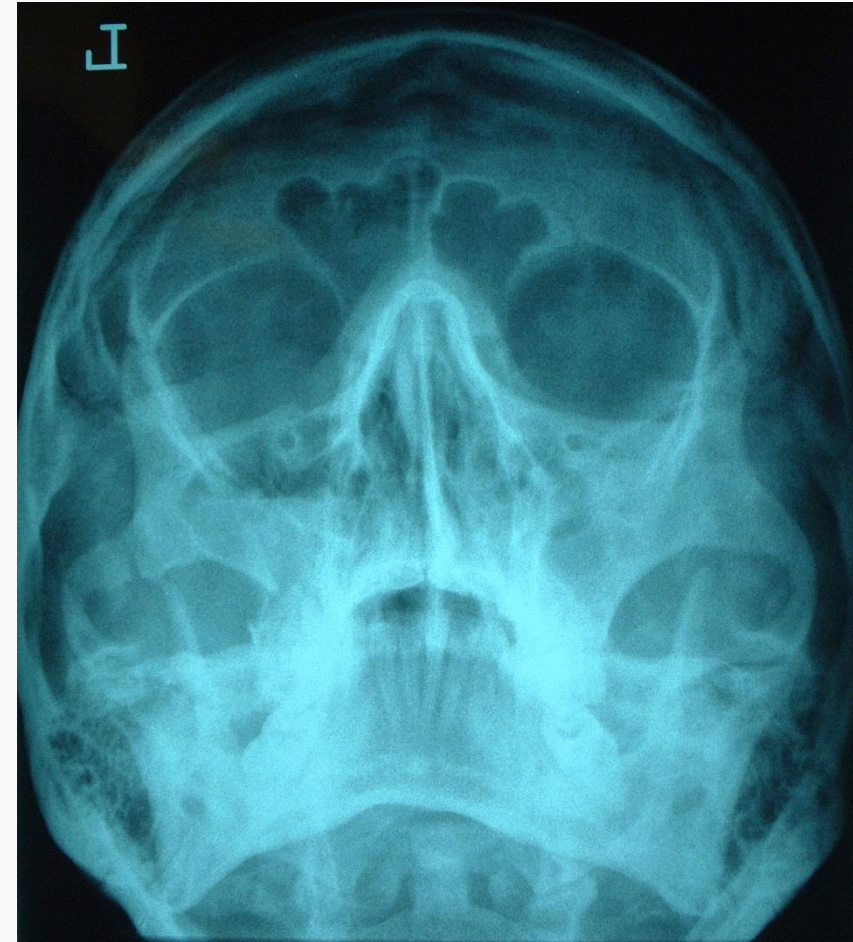
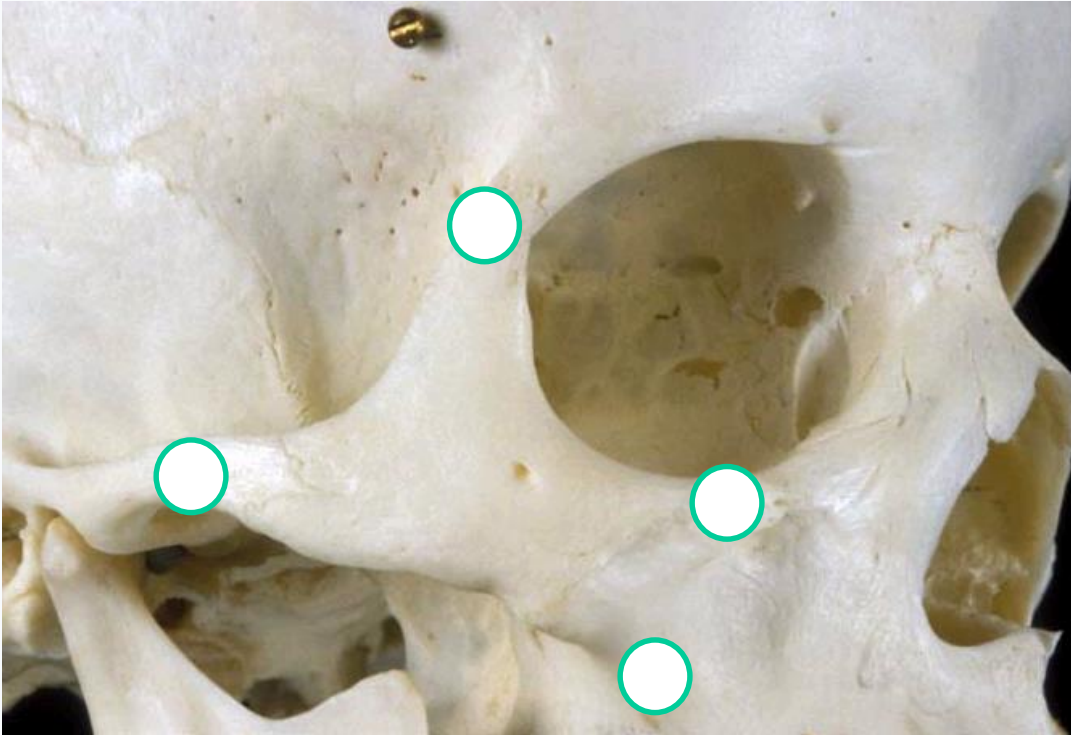
- Cheek prominence
- Appearance around the eye



Campbell's lines



Common zygomatic fracture sites

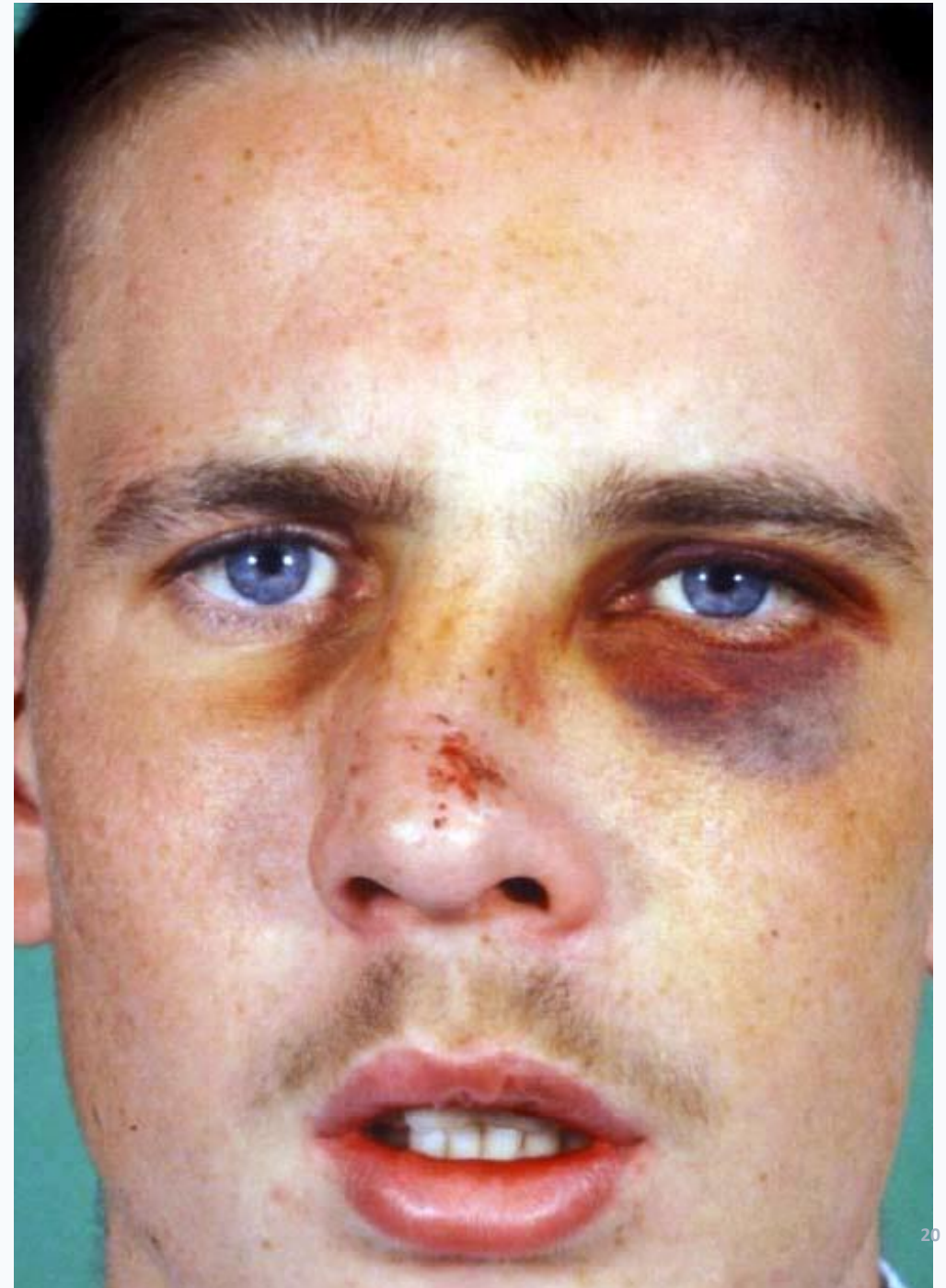


Nasal bones

Isolated nasal fractures go to ENT

OMFS will treat if in conjunction with other facial fractures

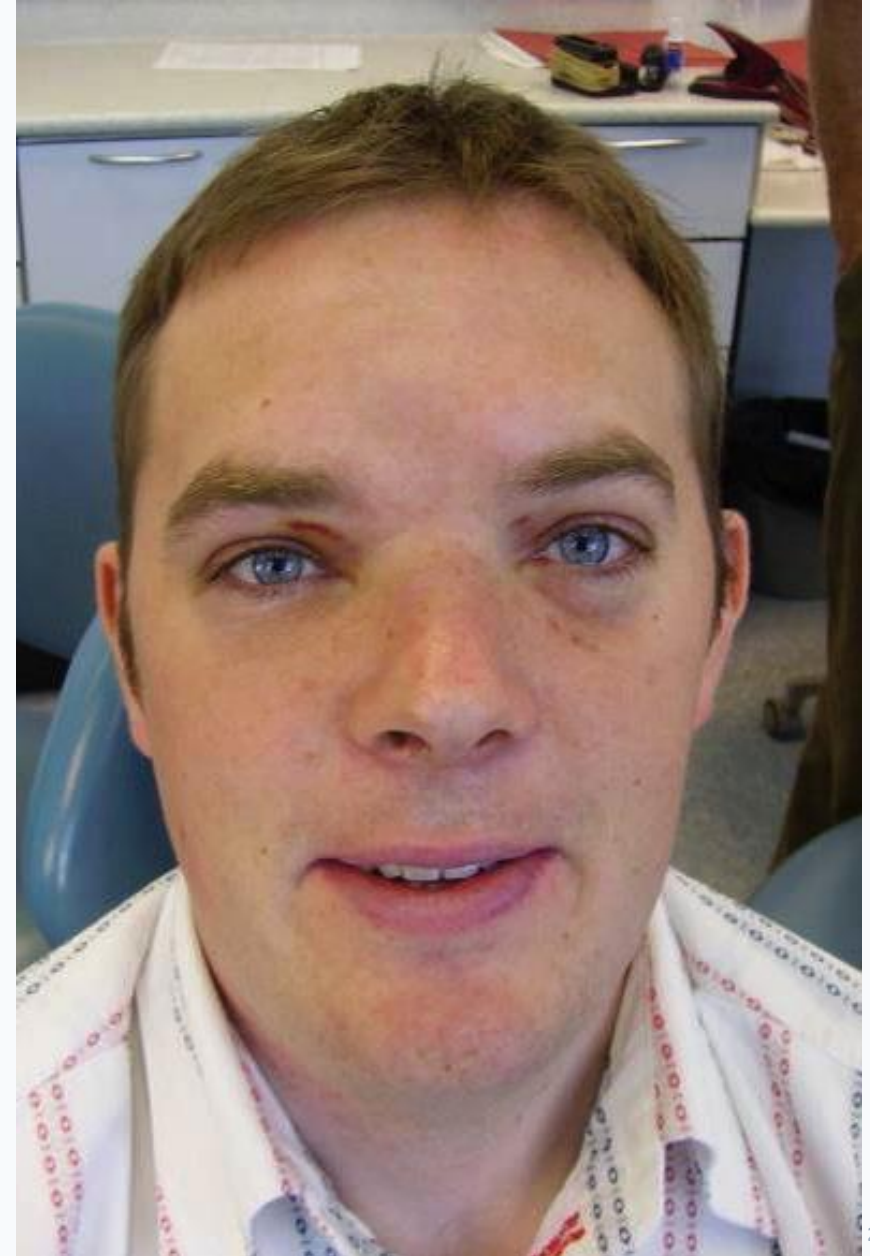
“Just a broken nose?”



Just a broken nose?

Consider...

- CSF leak
- Vision
- Septal haematoma
- Intercanthal distance



Naso-orbito-ethmoid complex



Canthal position matters

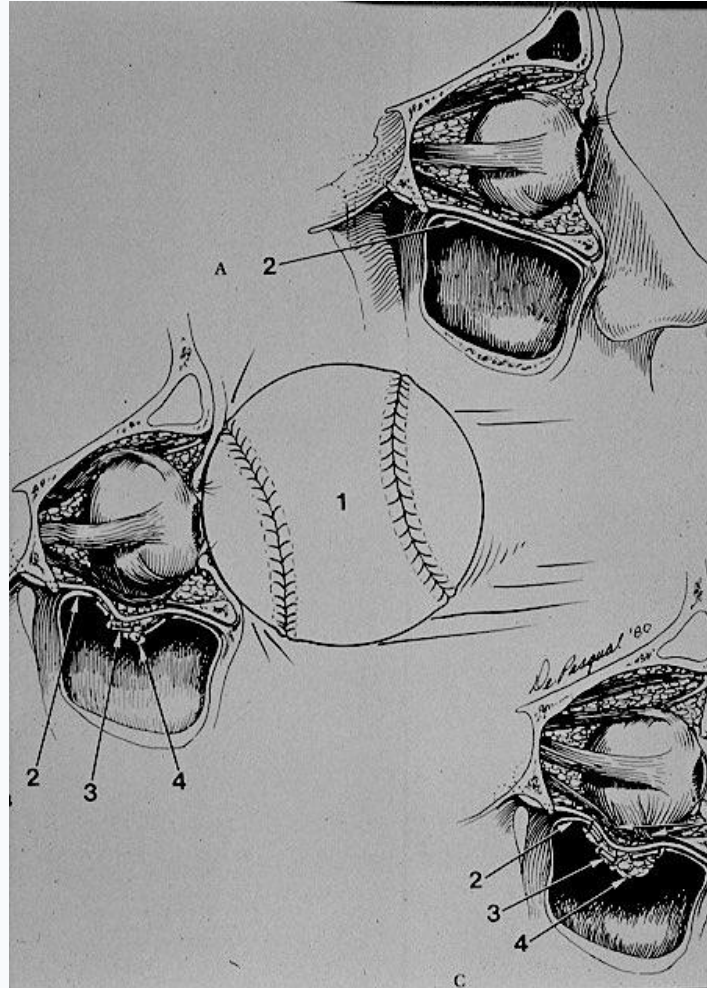
Movement of the canthus can cause deformity as in the previous photo

“Blowout” fracture

Clinical features

Change in position of the eye
Restriction of eye movement
Double vision

**ALWAYS RECORD
VISUAL ACUITY!!!**



Retrobulbar Haemorrhage

- **Severe eye or orbital pain**
- **Decreased or blurry vision**, especially red/colour vision or sudden total vision loss,
- **Double vision** (diplopia)
- **Nausea and vomiting**

This is an emergency, it will lead to permanent blindness within 90 minutes and needs urgent decompression

Lateral Canthotomy

Decompression in theatre

Clinical features

01

**Change in position of the
eye**

02

**Restriction of eye
movement**

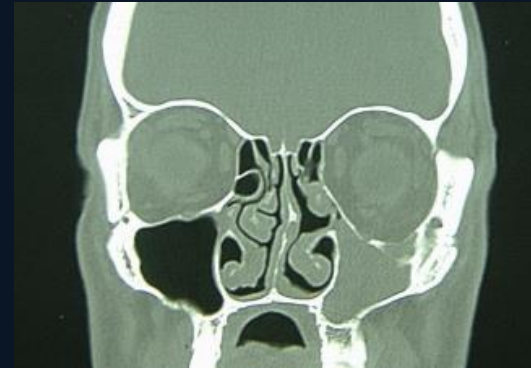
03

Double vision

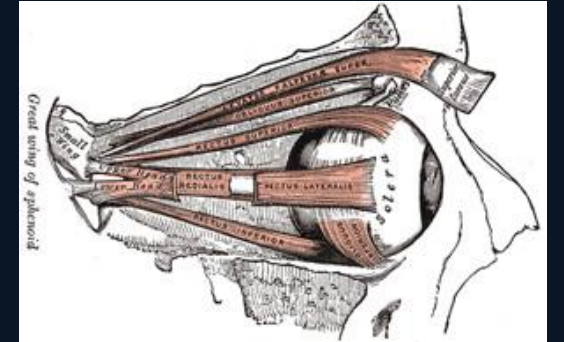
Look at the patient — and the scan



Clinical appearance



CT / anatomy



Visual acuity remains the priority

Enophthalmos / Hypoglobus



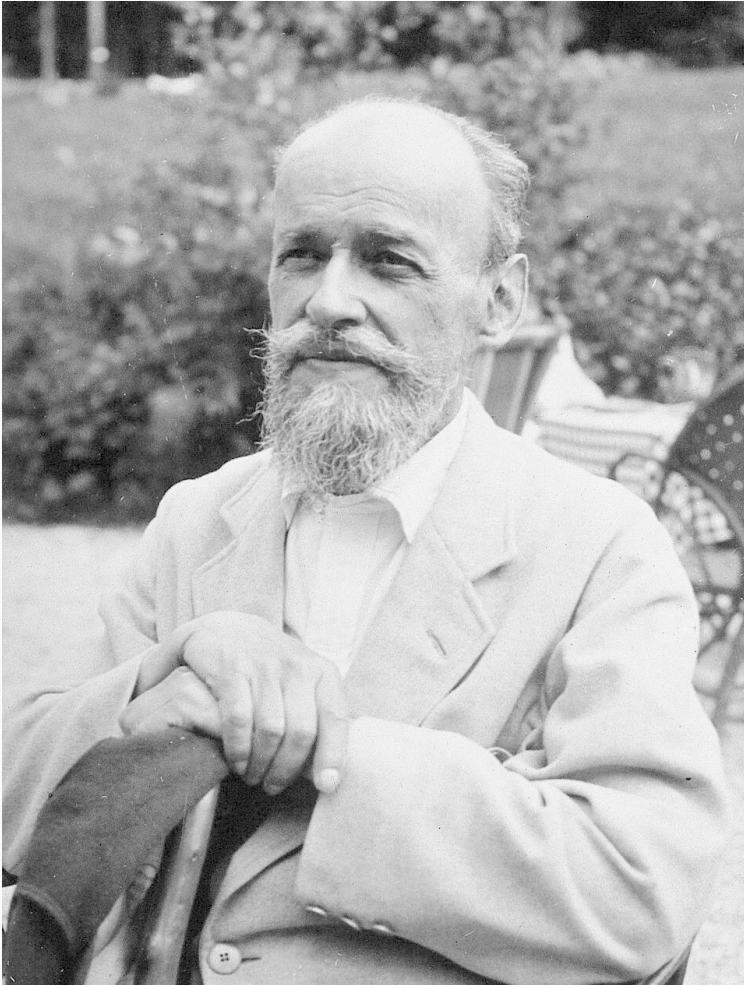
“Tear-drop”

Suggestive of orbital floor fracture

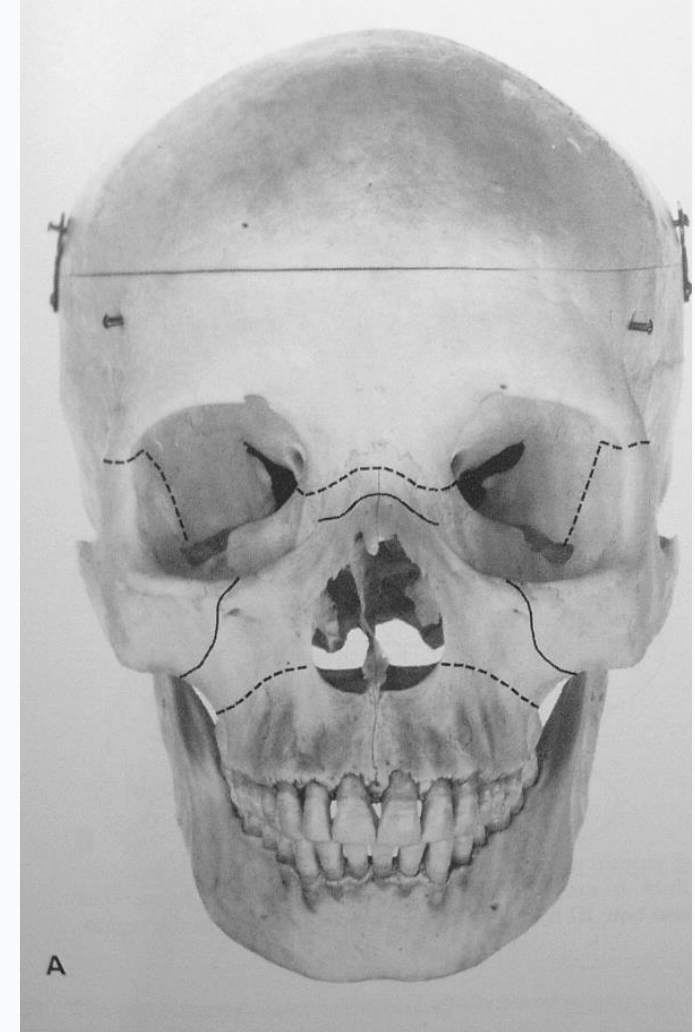
CT scanning usually required for definitive diagnosis and treatment planning.



Le Fort (Midface)



Rene LeFort (1869-1951)
“Although a common story holds that Le Fort used cannonballs to induce blunt trauma, he actually used a combination of wooden club, cast iron rod, squeezing in a vice, kicks, or simply throwing the heads against a table”



Frontal sinus

Frontal sinus



Multiple fractures



High energy injuries

Clinical Assessment

- 01 **Rule out other injuries / more pressing issues**
- 02 Develop your own systematic examination and documentation process
- 03 EPIC smartphrases useful to aid memory
- 04 Practice +++ - trauma clinic, admitting patients, ED calls
- 05 Learn from missed injuries - we have all done it

Clinical Assessment

“Have you hurt yourself anywhere else?”

“Are there any other problems relating to this injury?”

- **Orbital rims / Frontal region**
- **Nose incl septum**
- **Prominences**
- **Mandible, TMJ, opening, lateral movements.**
- **Eye movements / restriction**
- **Arches**
- **Midface stability**
- **Teeth, occlusion and oral mucosa**

Helpful hints

- 01 Look at CT scan in 3d - many fractures are clearly apparent. Can get caught out with orbital floors/medial orbits
- 02 Read the CT report
- 03 **If in any doubt - ask for advice. Better to have a short delay than accepting a patient that you cannot manage, ie head injury, ruptured globe etc**
- 04 Try to improve your own ability to interpret scans - the ward round is a teaching event every day.

THANK YOU