IMAGING BRAIN TRAUMA

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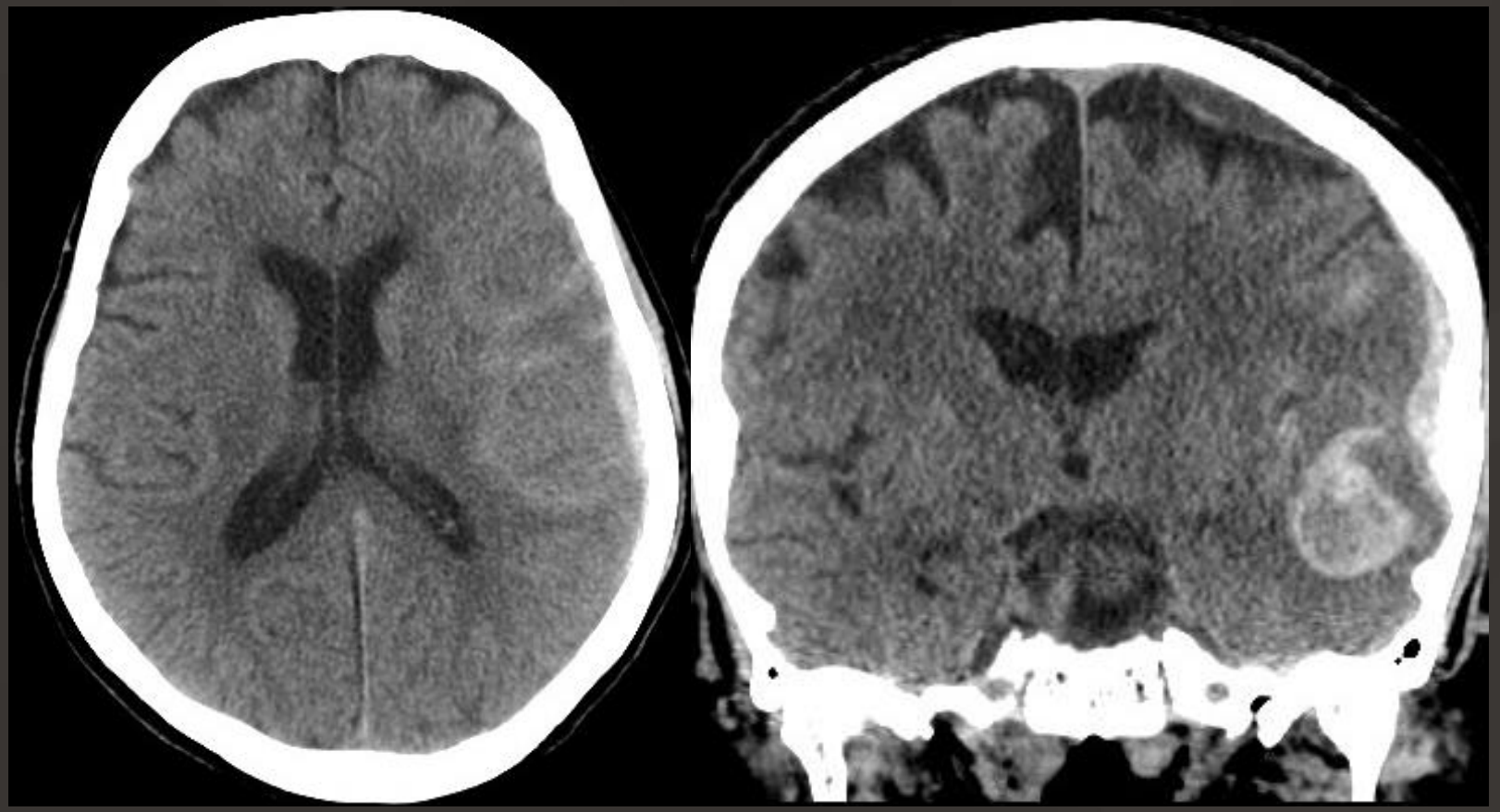
Disclosures

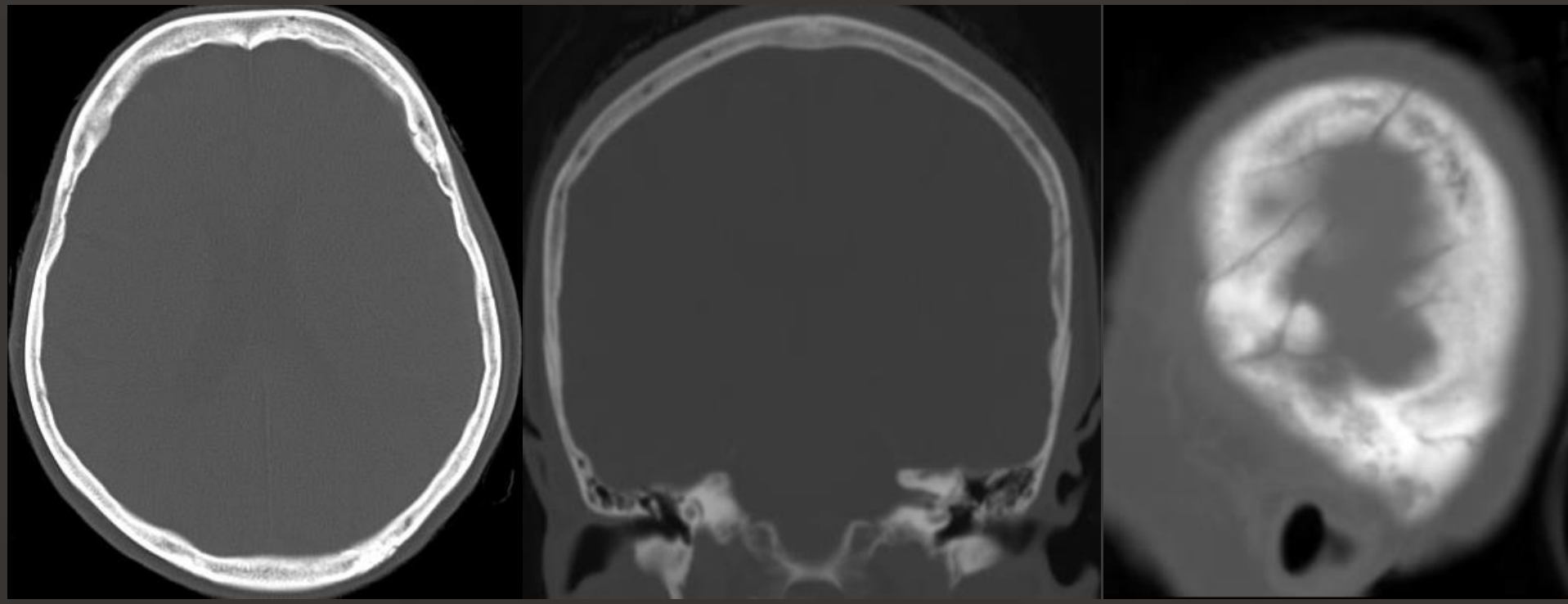
- Neither me nor my immediate family have a financial relationship with a commercial organization that may have a direct or indirect interest in the content of this presentation.

Objectives

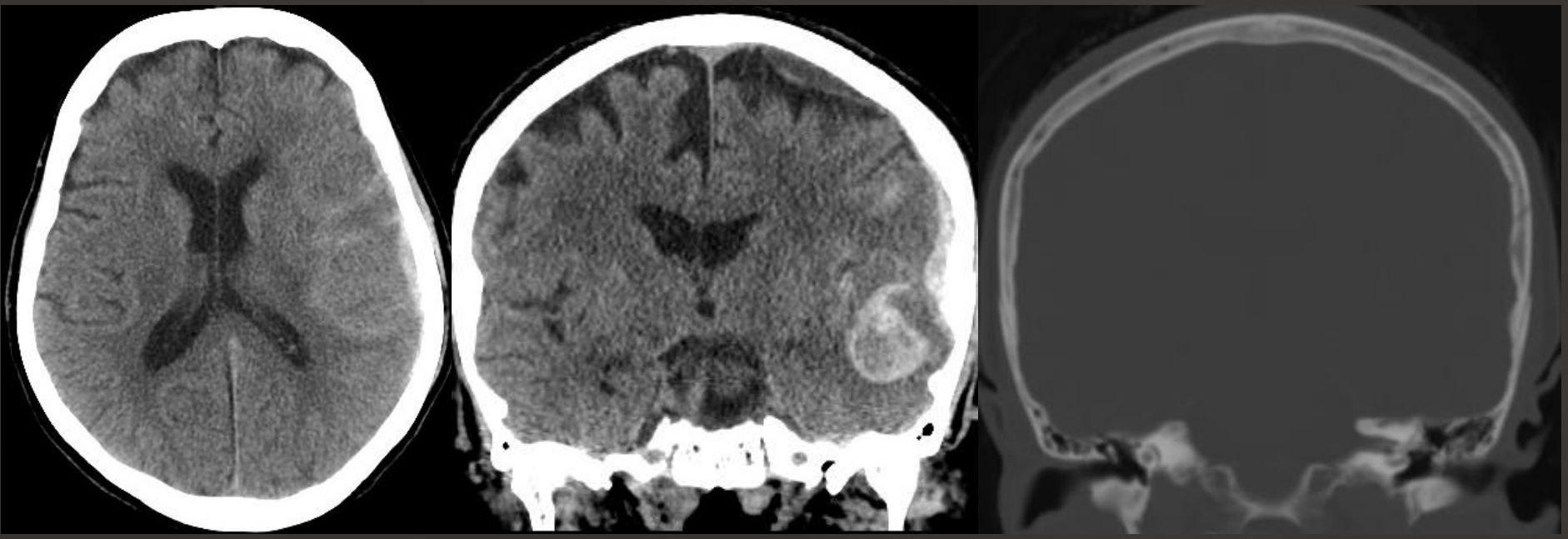
- Identify imaging findings of primary and secondary injuries in and around the brain

65 Y M: Fall, HI



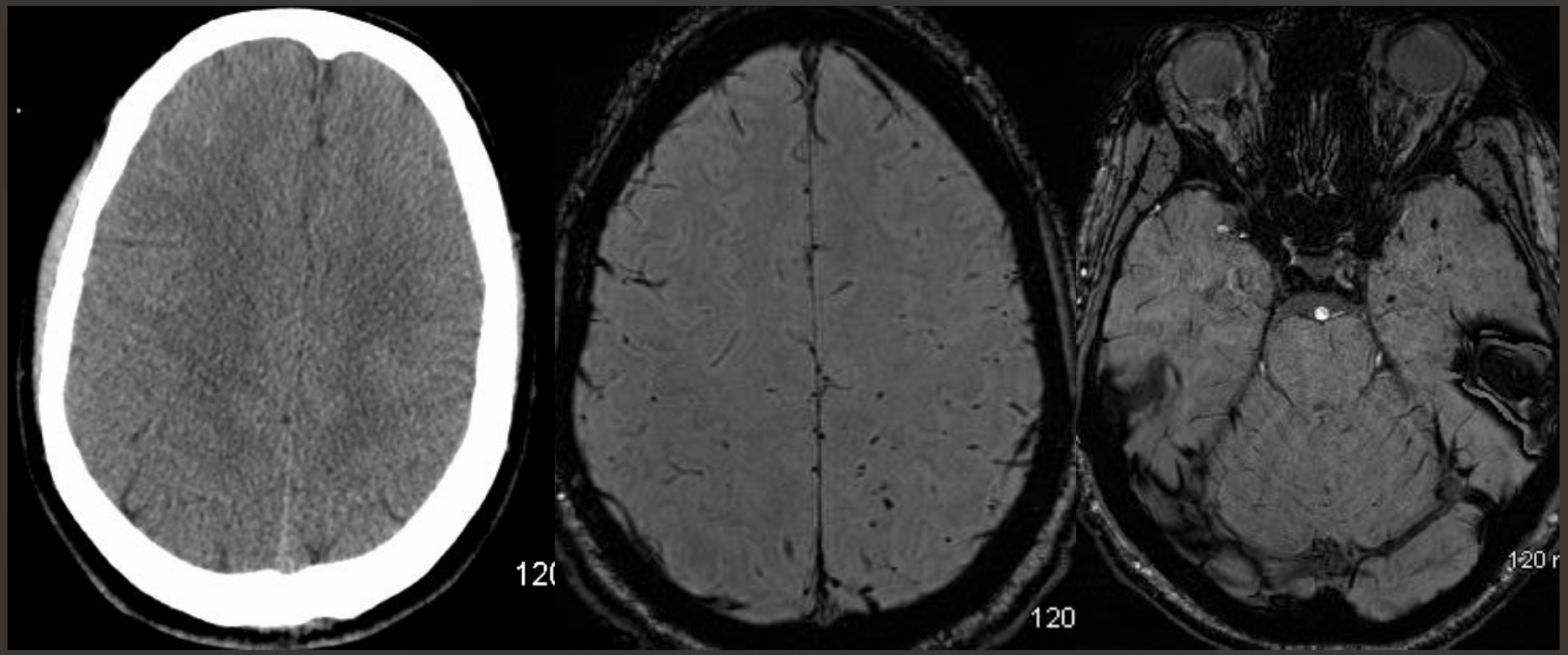


Use your reformats!!!



- SDH vs EDH
- Skull #

43 Y M: MVC, LOC

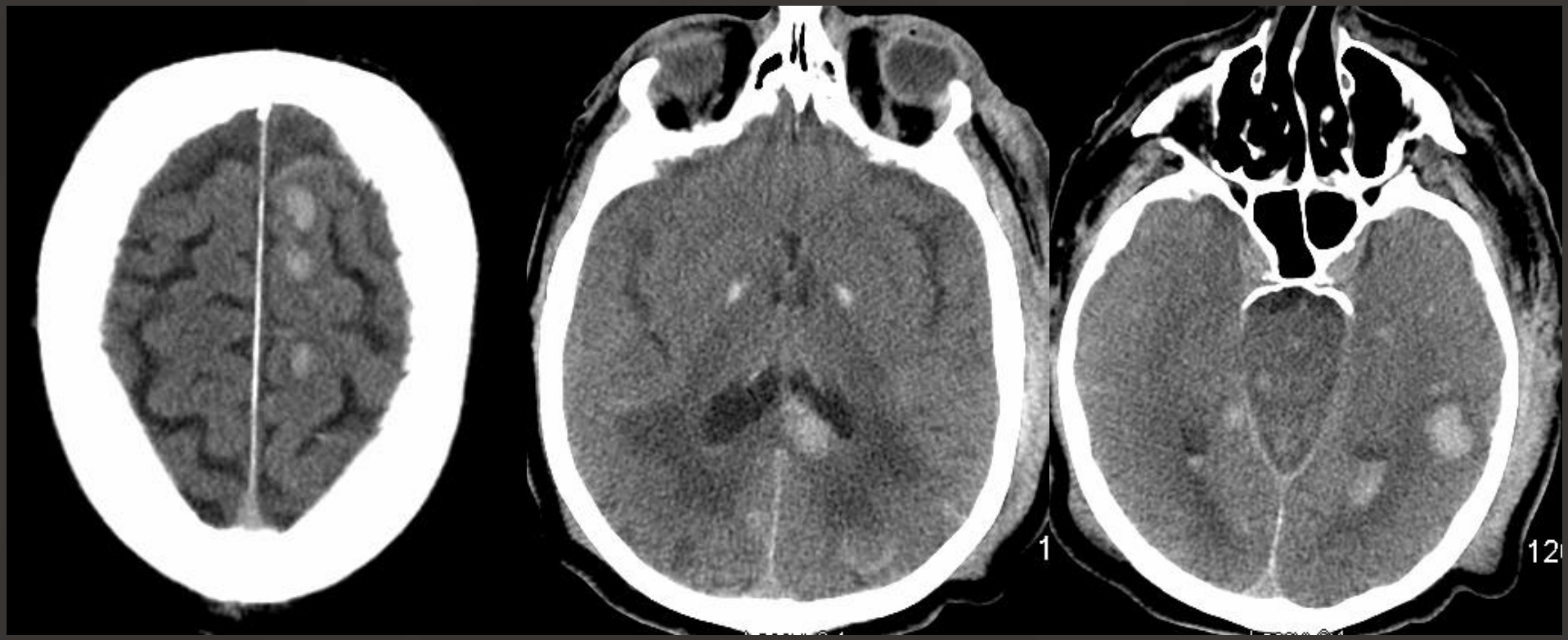


DIFFUSE AXONAL INJURY DAI (I)

Stretch/shear at interfaces between tissues of different density

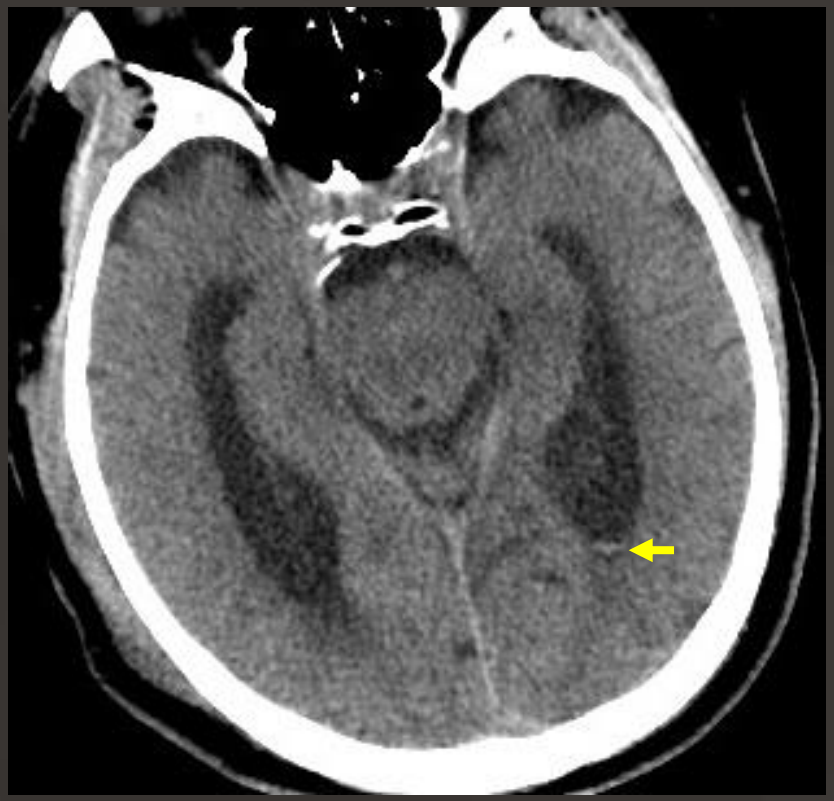
Disproportionate clinical & imaging

DAI

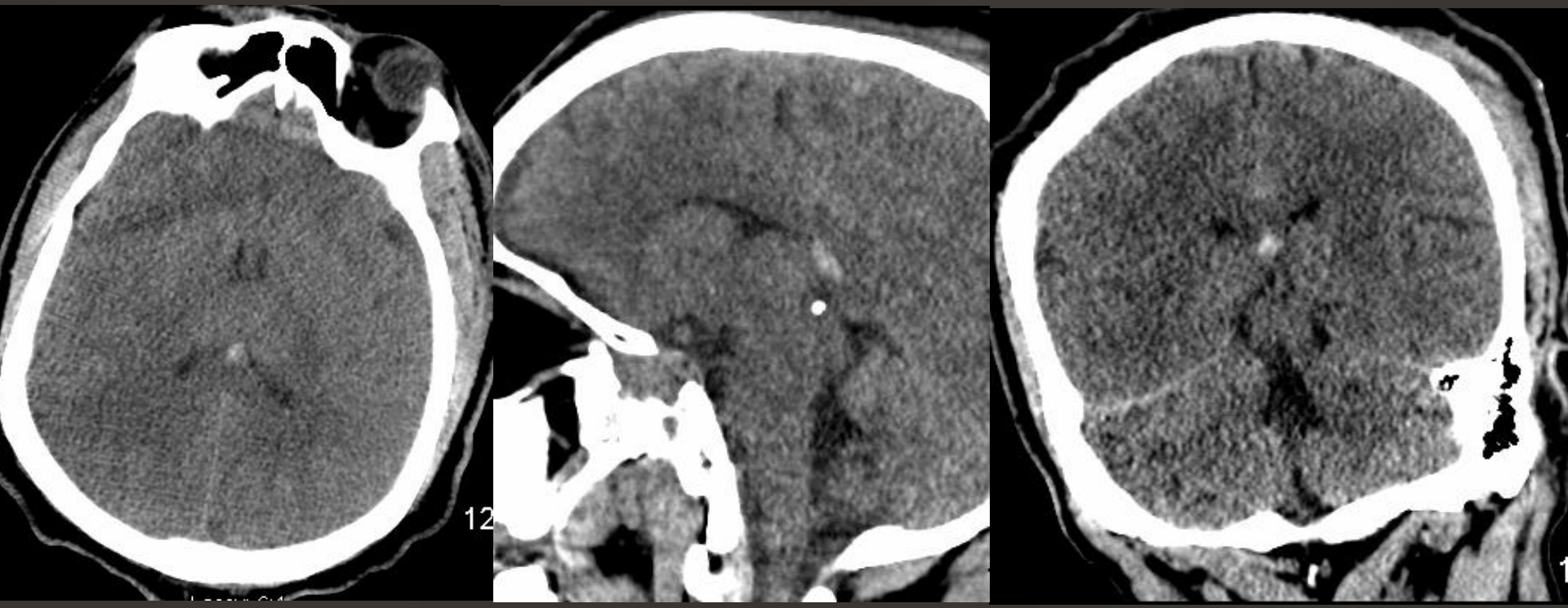


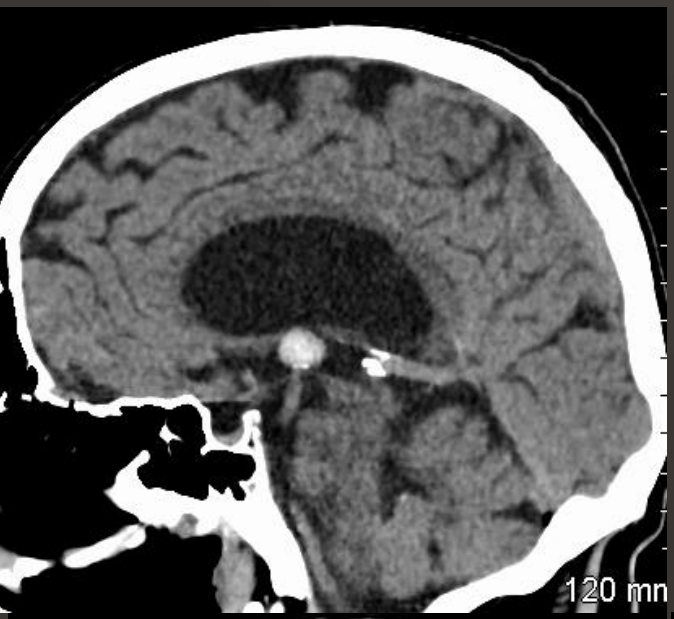
I II III

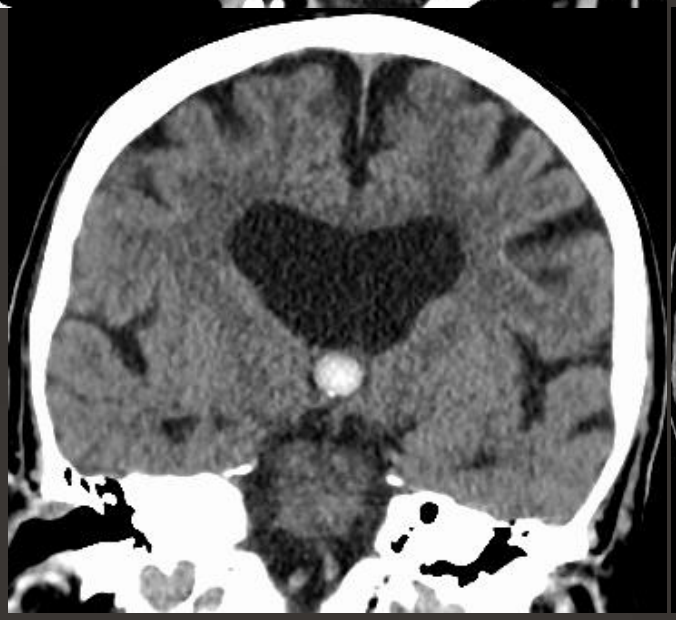
IVH !!!

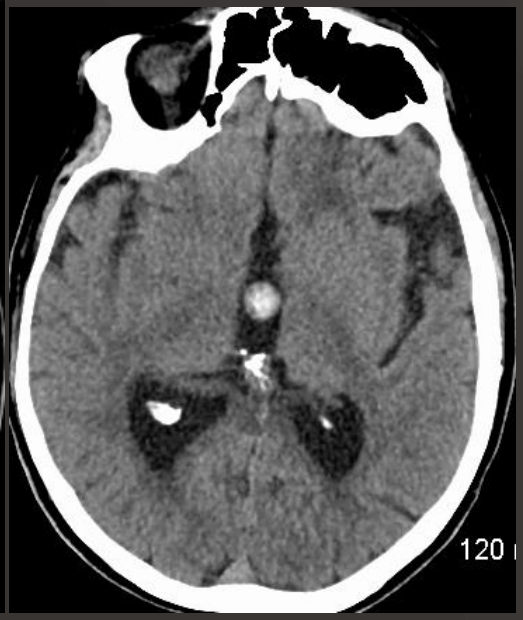


IVH !!!





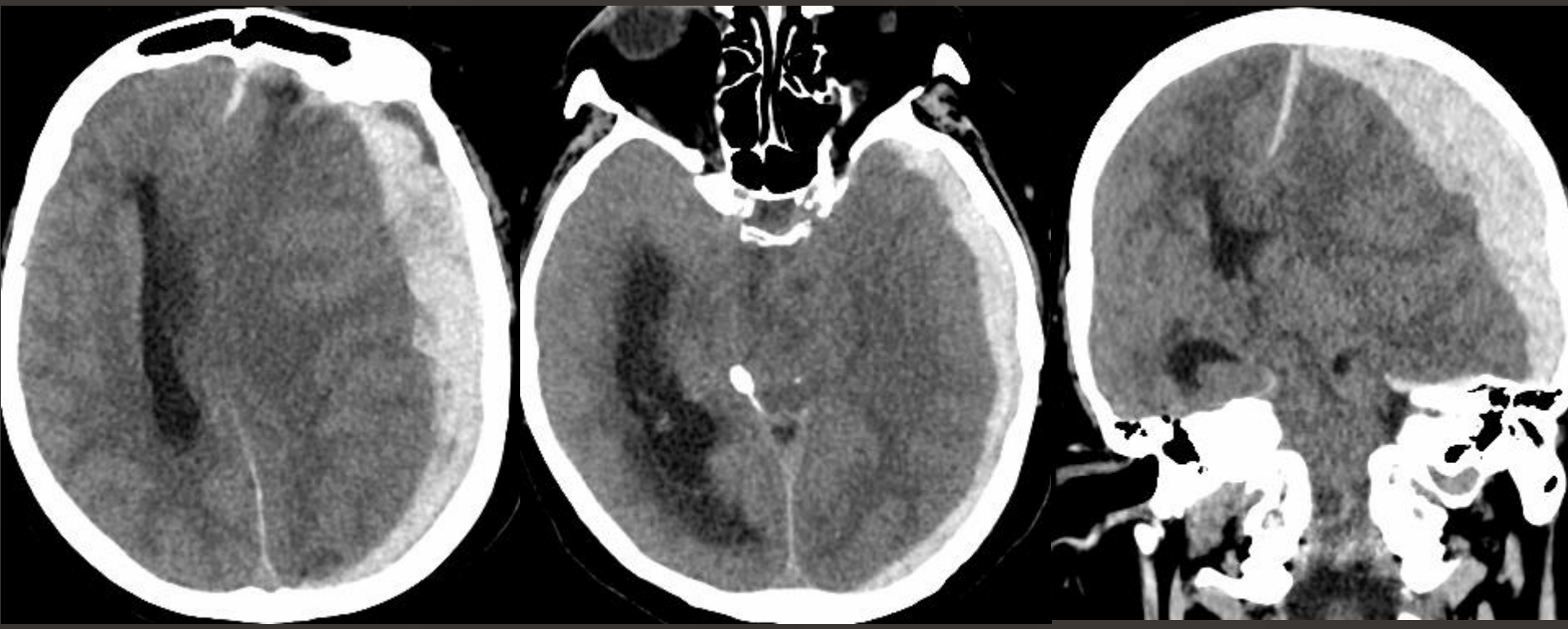




MVC, most likely Dx:

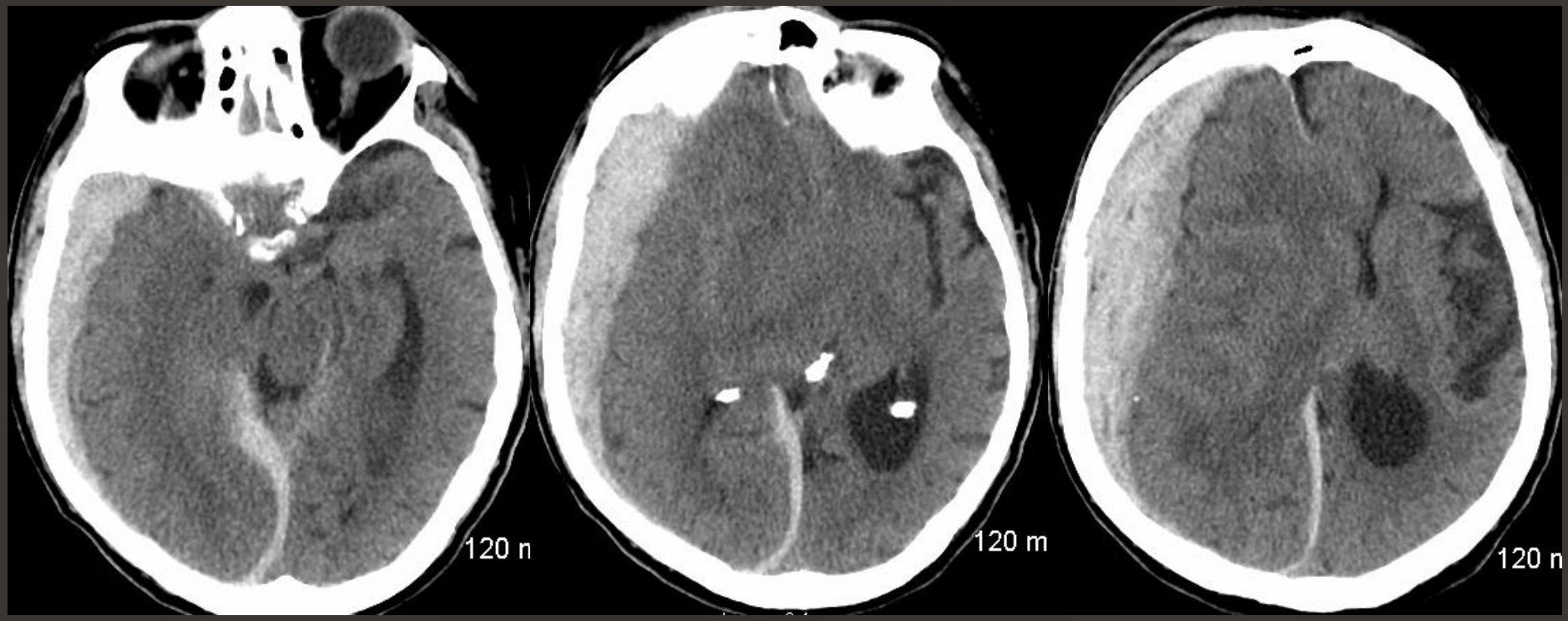
1. IVH
2. Colloid cyst
3. Basilar Aneurysm
4. SEGA

ACUTE SDH + HERNIATION

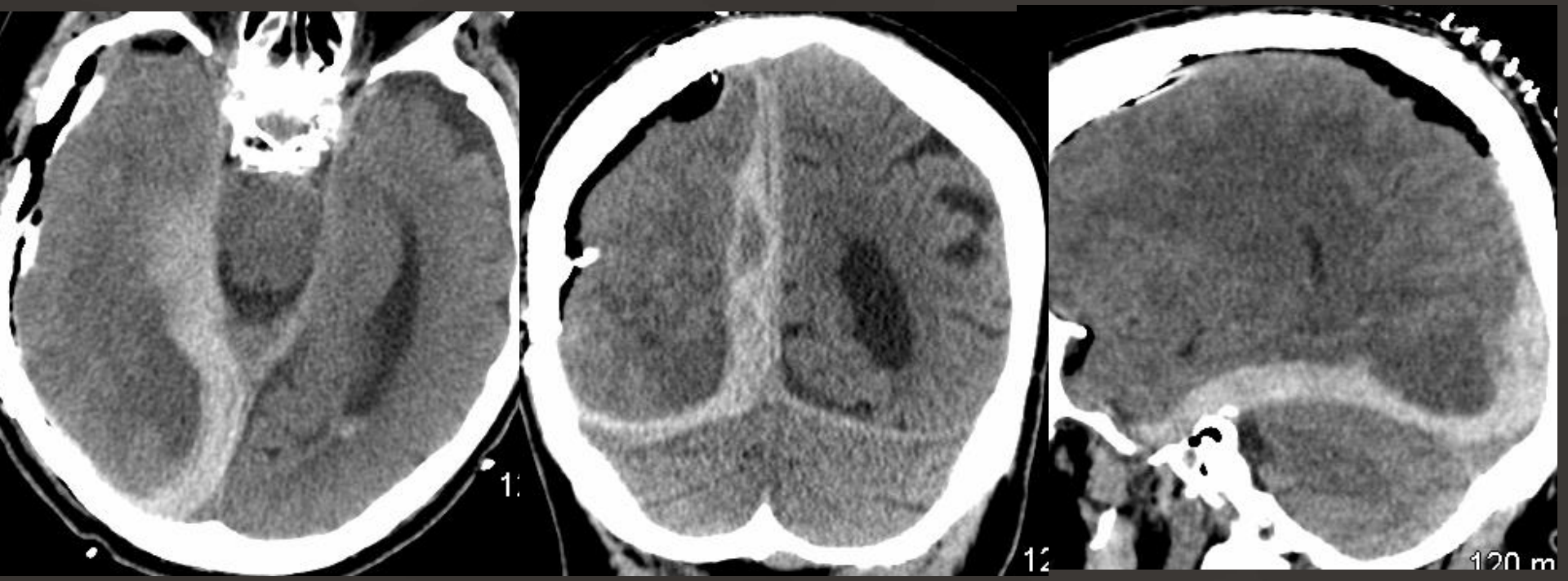


- NAME THE HERNIATION
- KERNOHAN'S NOTCH
- HC

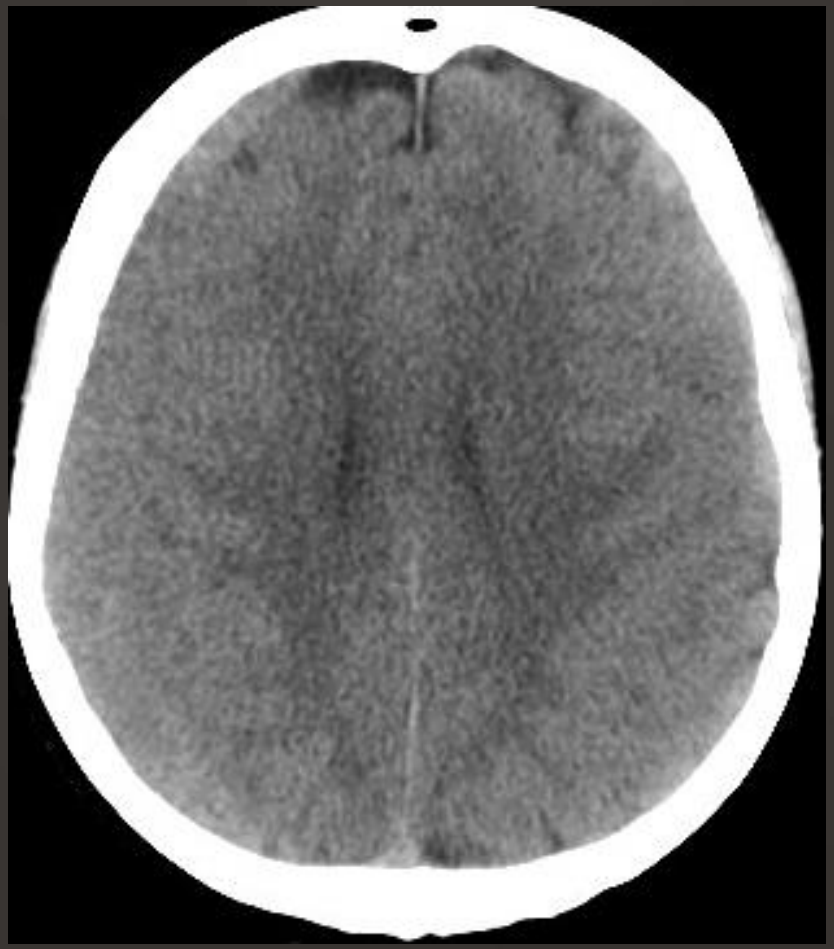
ACUTE SDH + HERNIATION



HERNIATION + SECONDARY ISCHEMIA



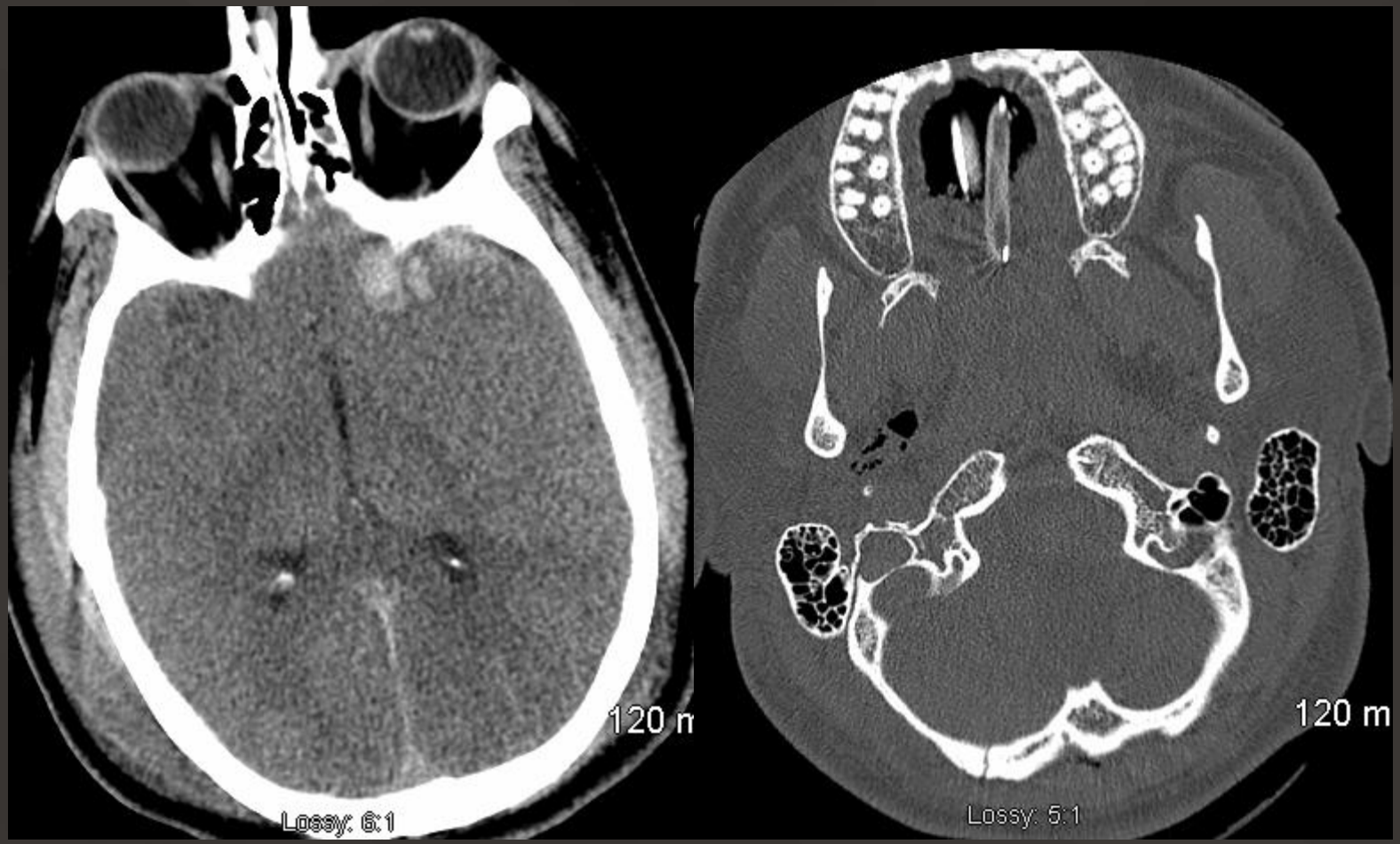
A: PCA / ACA + TENTORIUM / FALX



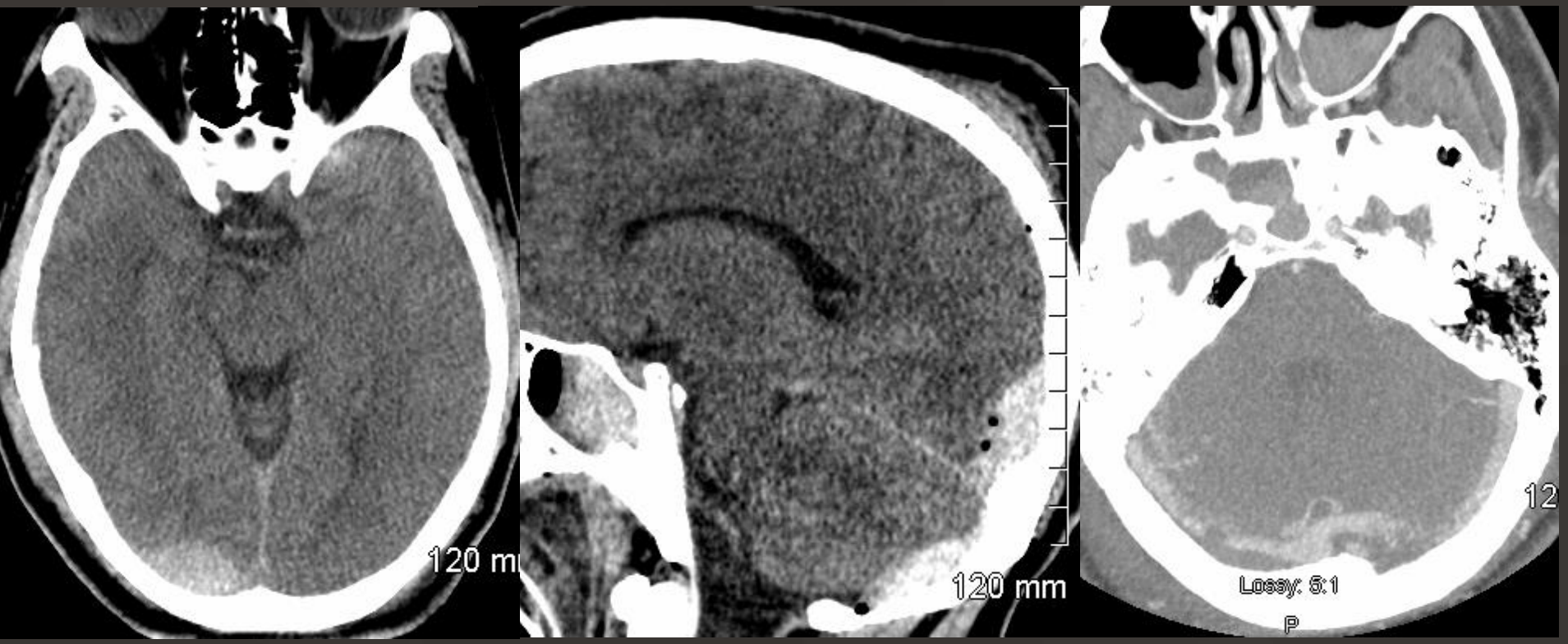
Most likely diagnosis:

1. Diffuse brain edema
2. Epidural Hemorrhage
3. DAI
4. Subdural Hemorrhage
5. Nil acute

45 Y M: MVC

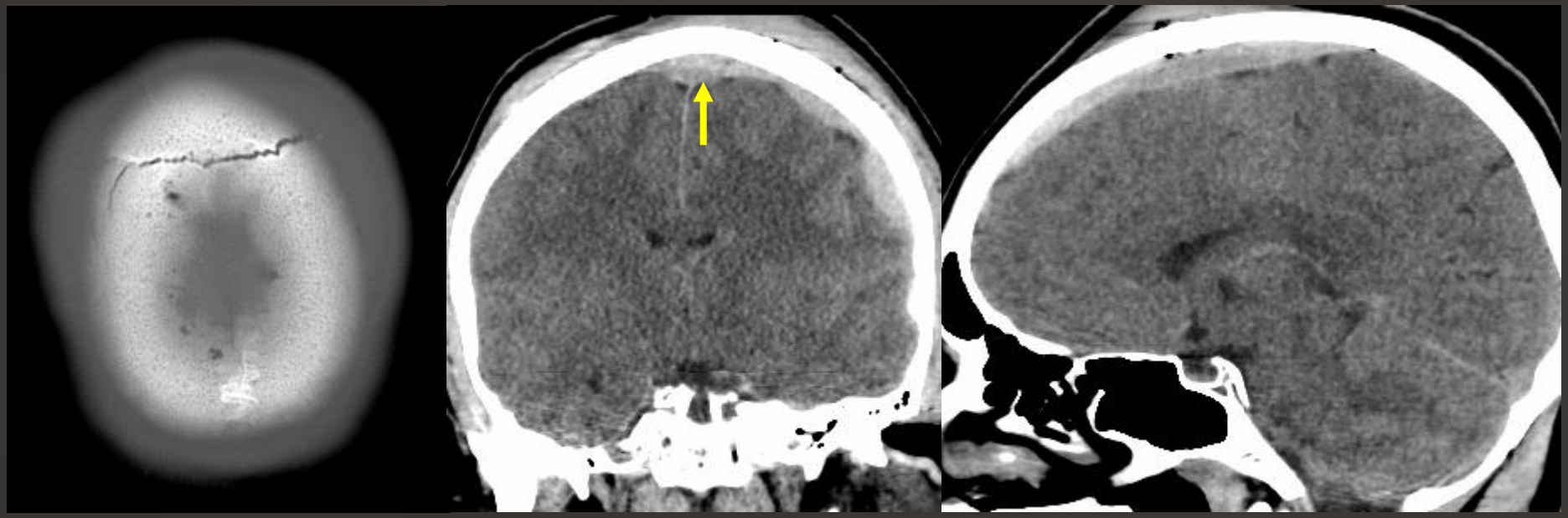


VENOUS EDH



Skull # crossing Venous Sinus (TV)

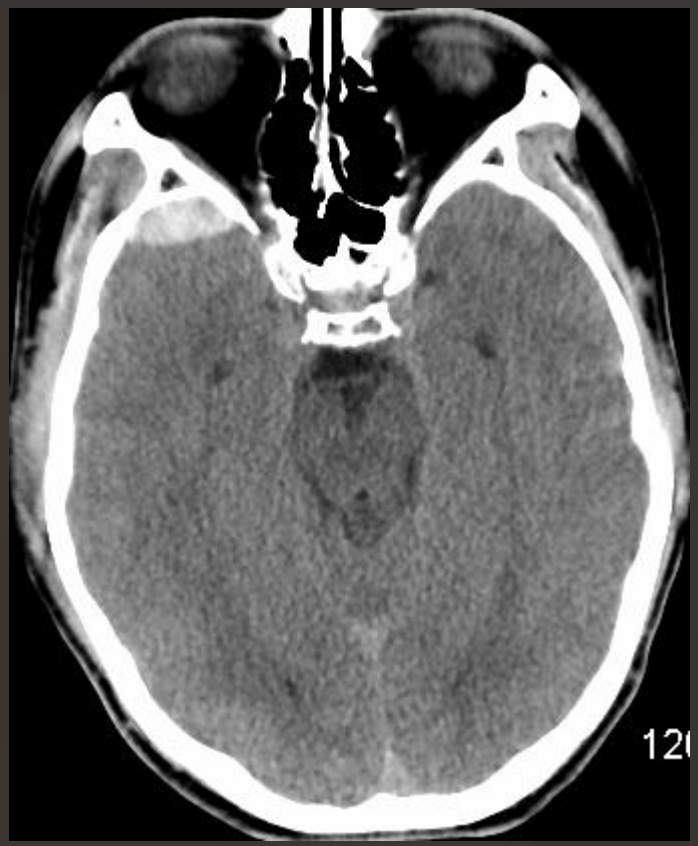
VENOUS EDH



VERTEX
SSS

VENOUS EDH

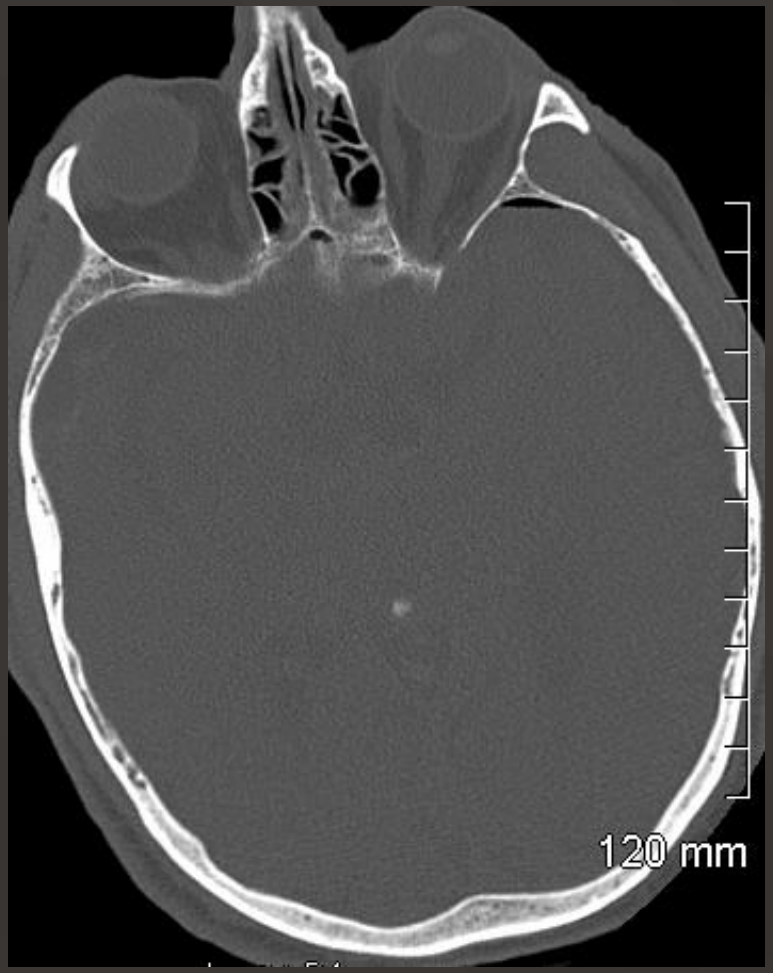
Name the injured Venous structure

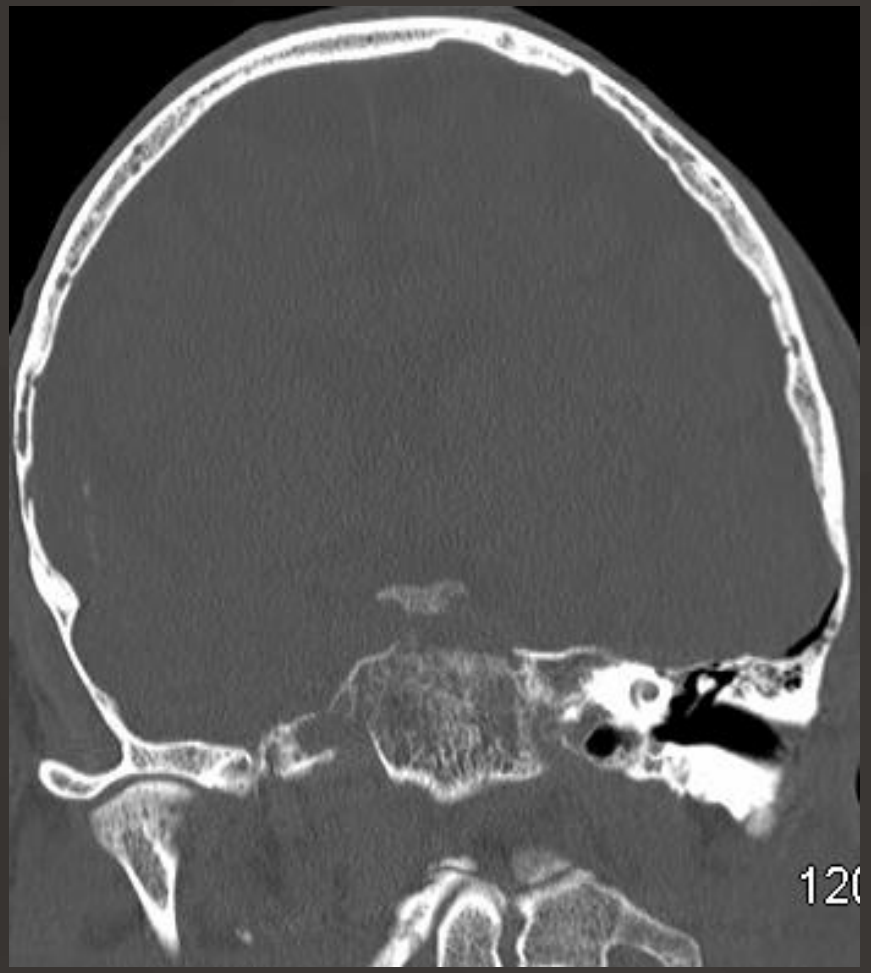


1. Cavernous sinus
2. Vein of Labbe
3. Sphenoparietal sinus
4. Basal Vein of Rosenthal

45 Y M: MVC

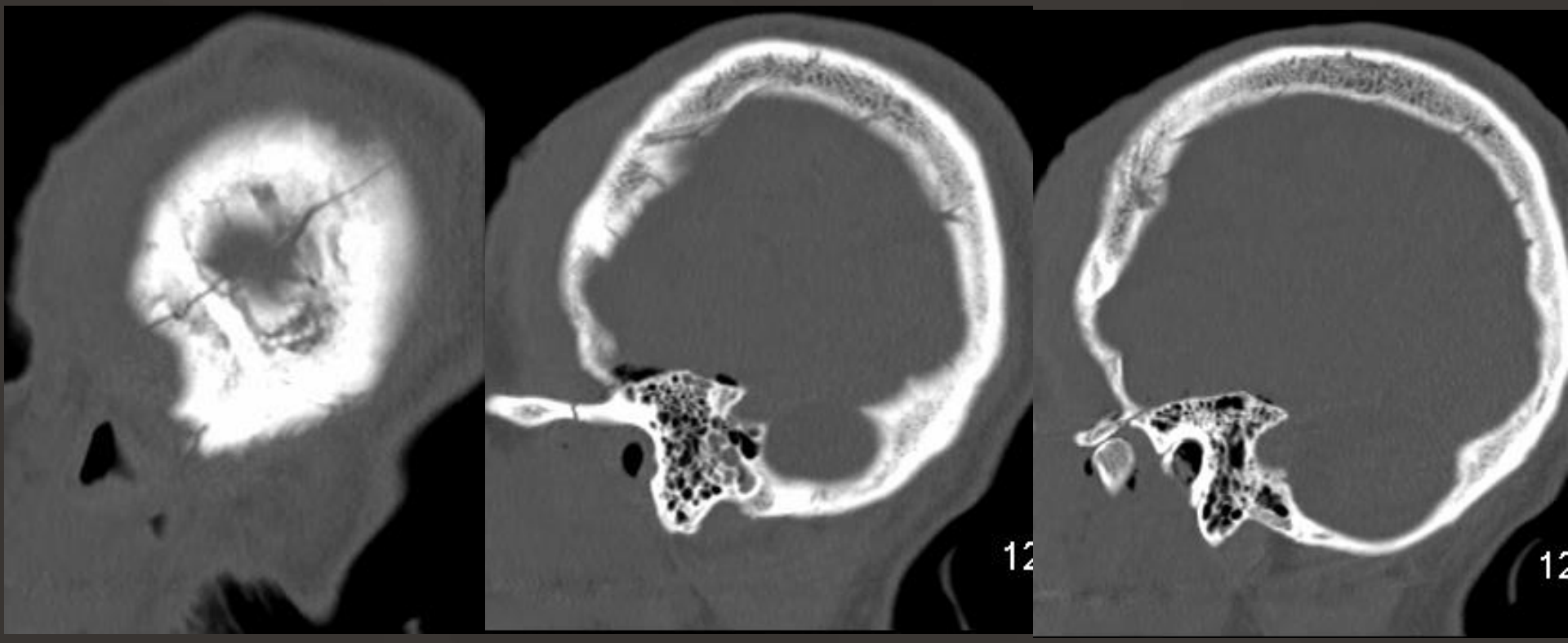
45 Y M: MVC



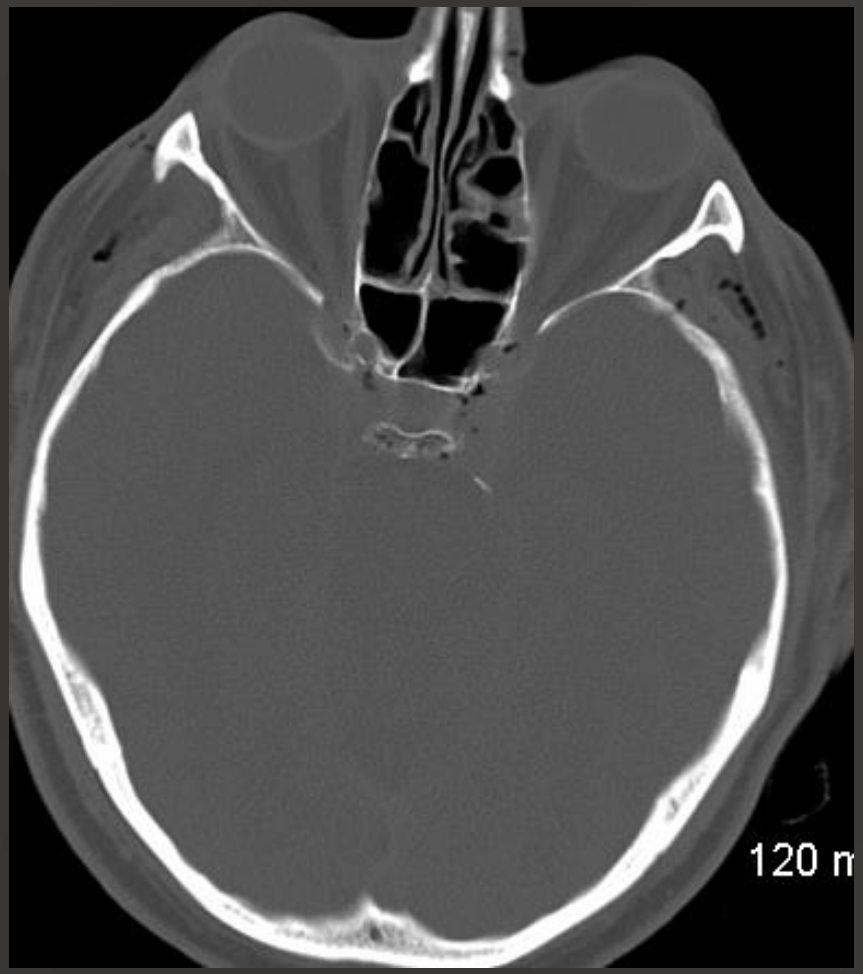


Pneumocephalus!!

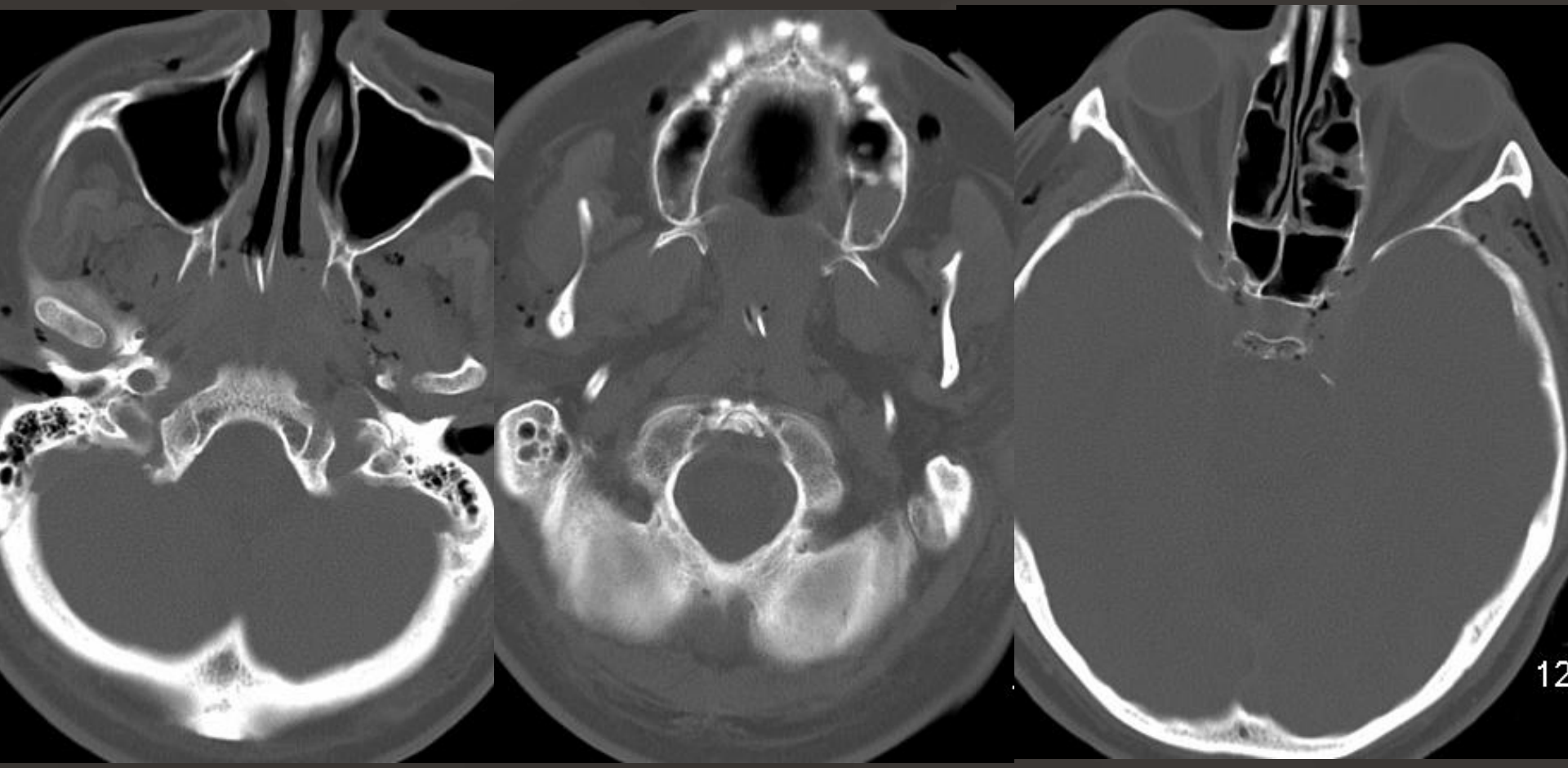
Pneumocephalus----



Pneumocephalus?

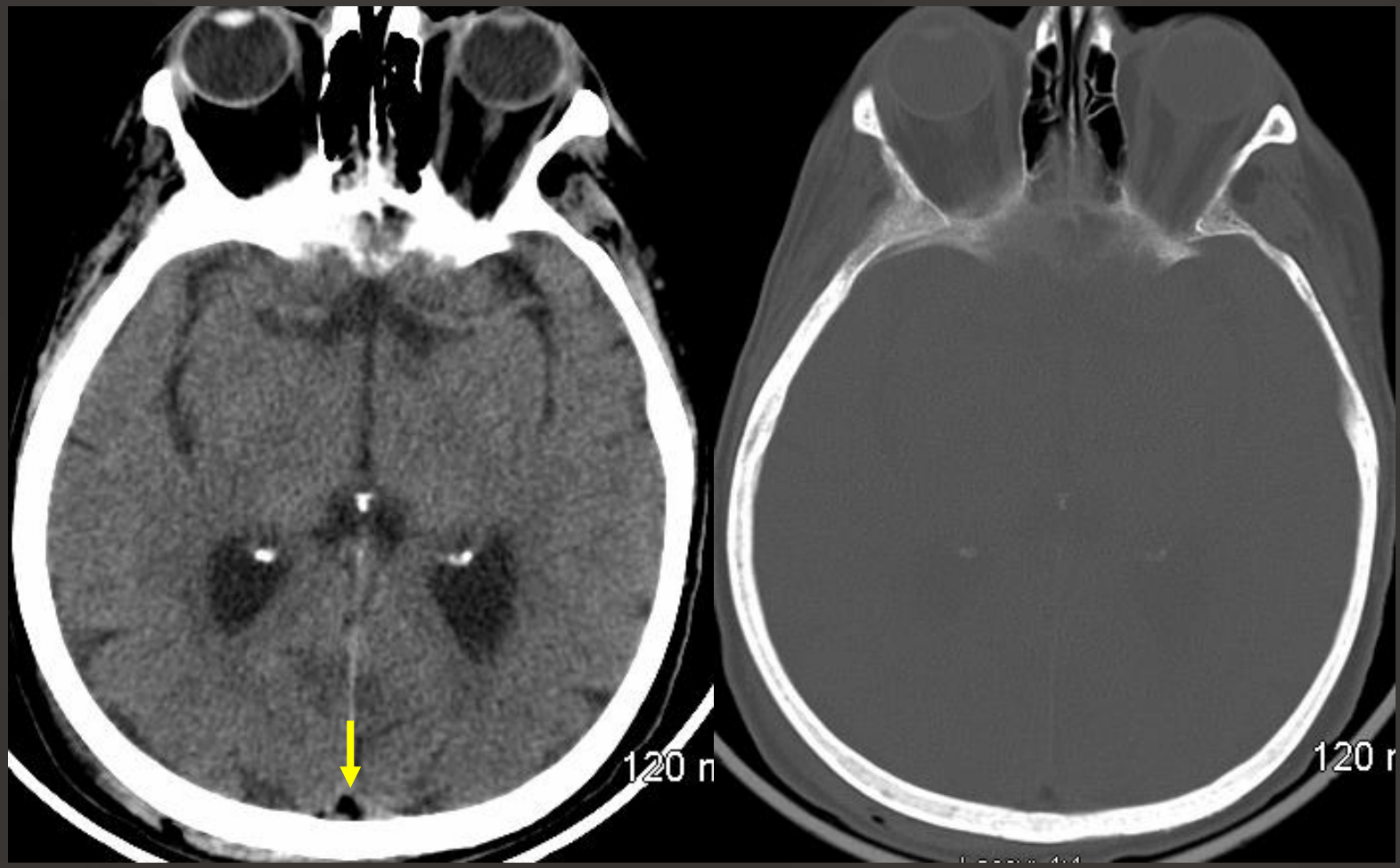


VENOUS GAS !!

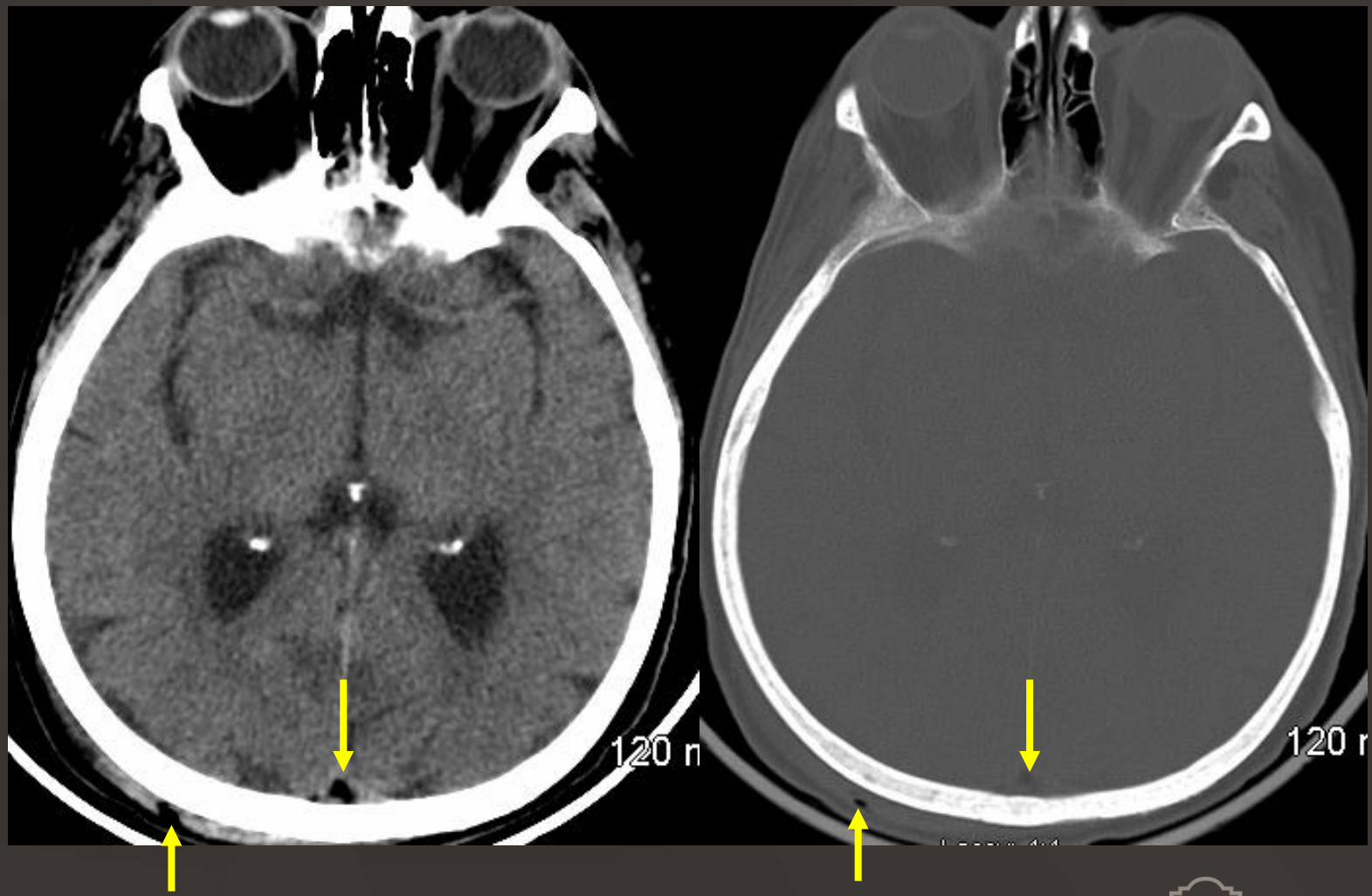


NOT Pneumocephalus!!

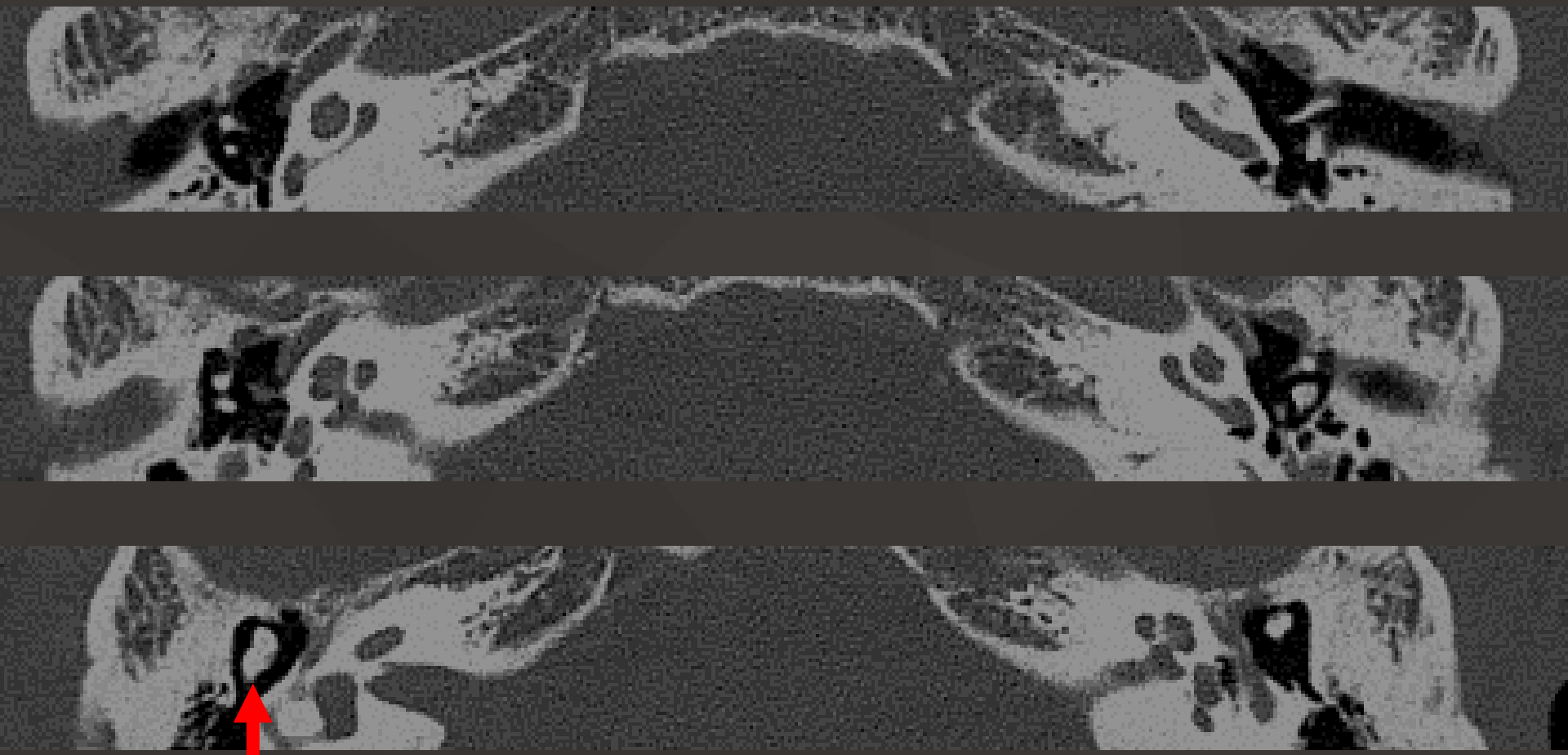
Pneumocephalus?



FAT



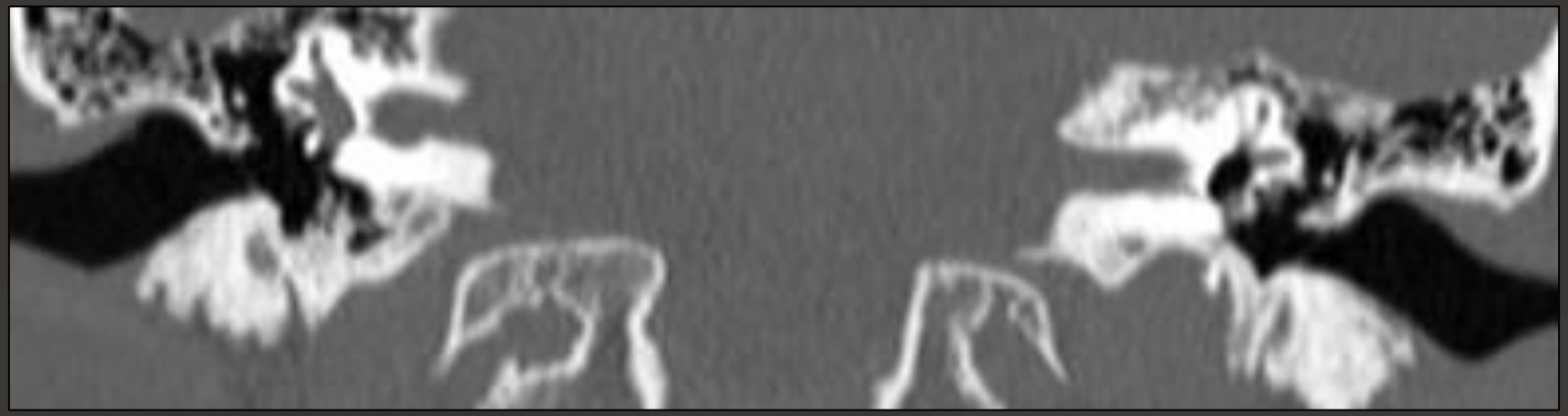
45 Y M: MVC



OSSICULAR DISLOCATION

- ***Incudomalleolar dislocation***
  "ice-cream cone"
- Incudostapedial dislocation
- Incus dislocation

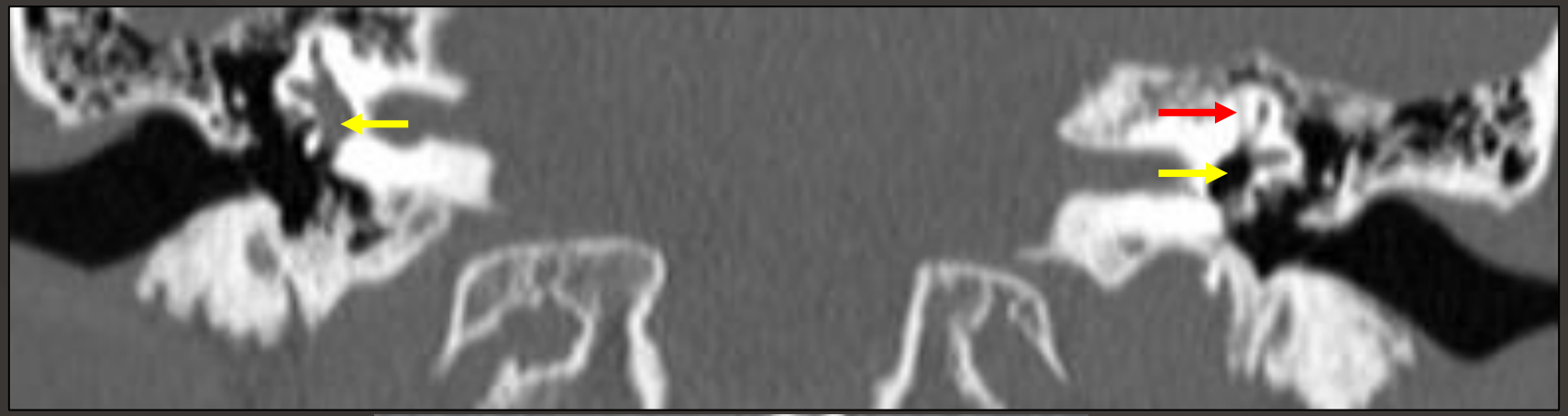
- ***CHL***

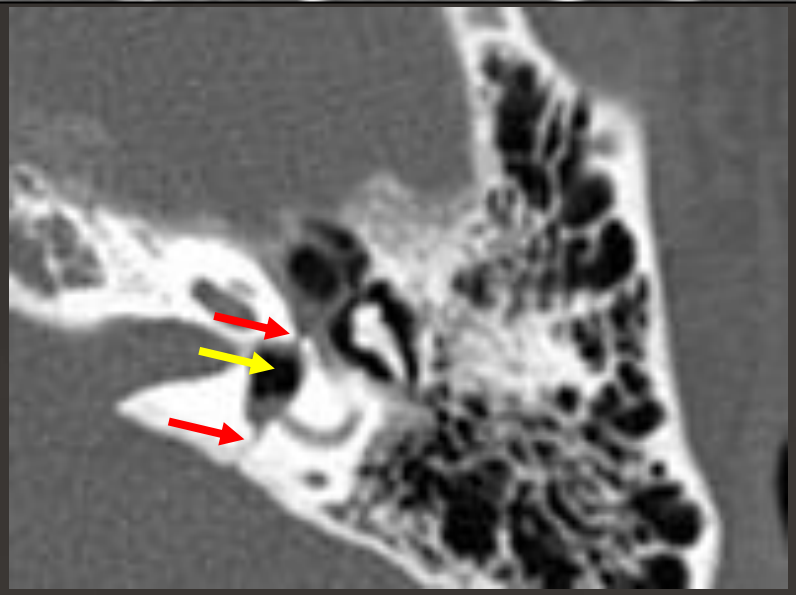


MVC, correct statement:

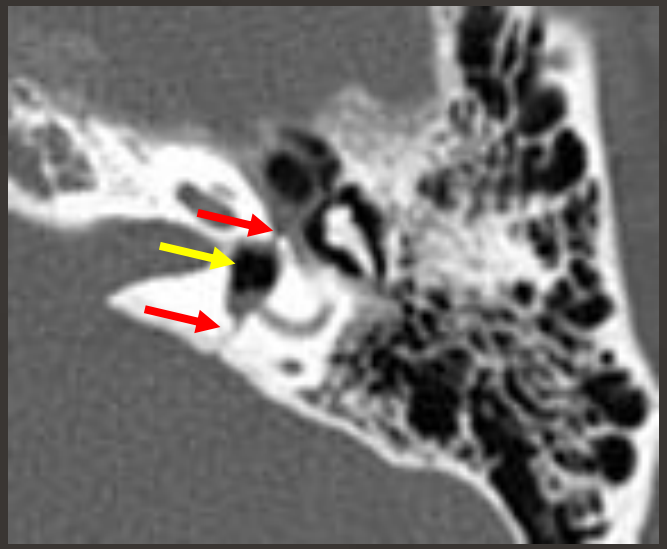
1. Right Temporal bone fracture
2. No Temporal bone fracture
3. Left Temporal bone fracture
4. Bilateral Temporal fractures

Transverse otic-violating TB # with pneumolabyrinth





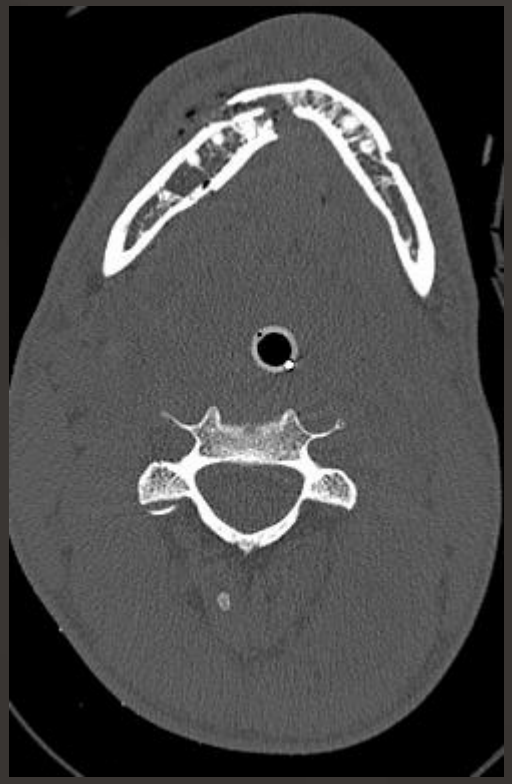
Transverse otic-violating TB # with pneumolabyrinth

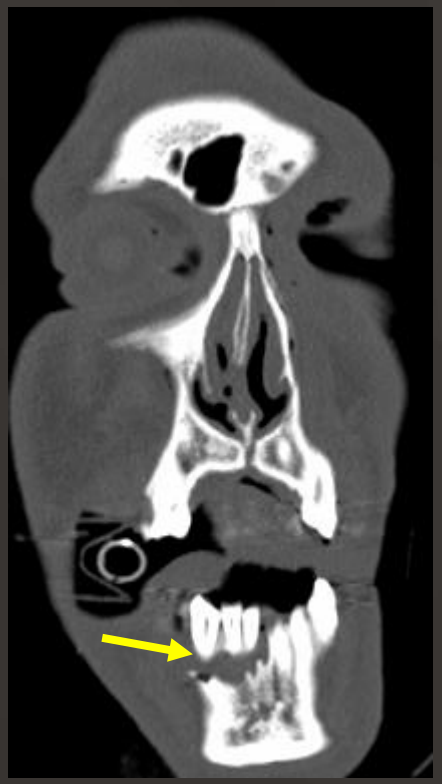


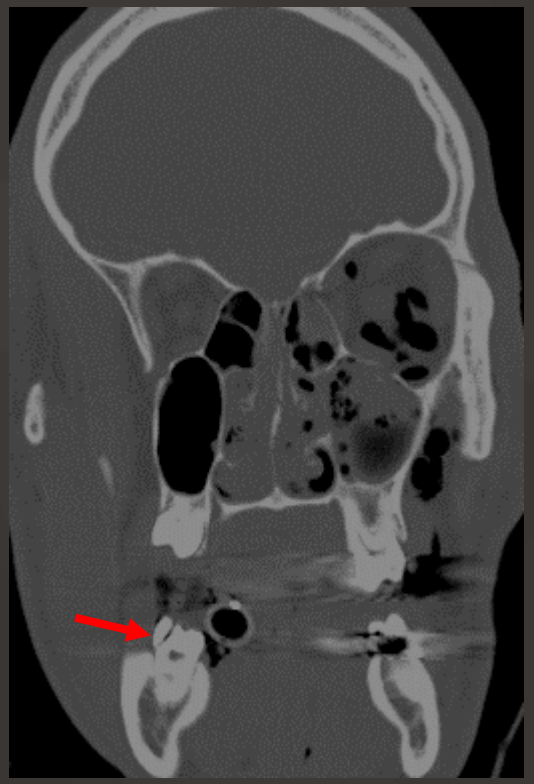
- ***Perilymphatic fistula:*** abnormal communication between middle and inner ears.
- Post-traumatic, postoperative, secondary to cholesteatoma or idiopathic.
- Long Vs TV # (CN 7 & OC)
- ***Otic Violating #***

45 Y M: MVC

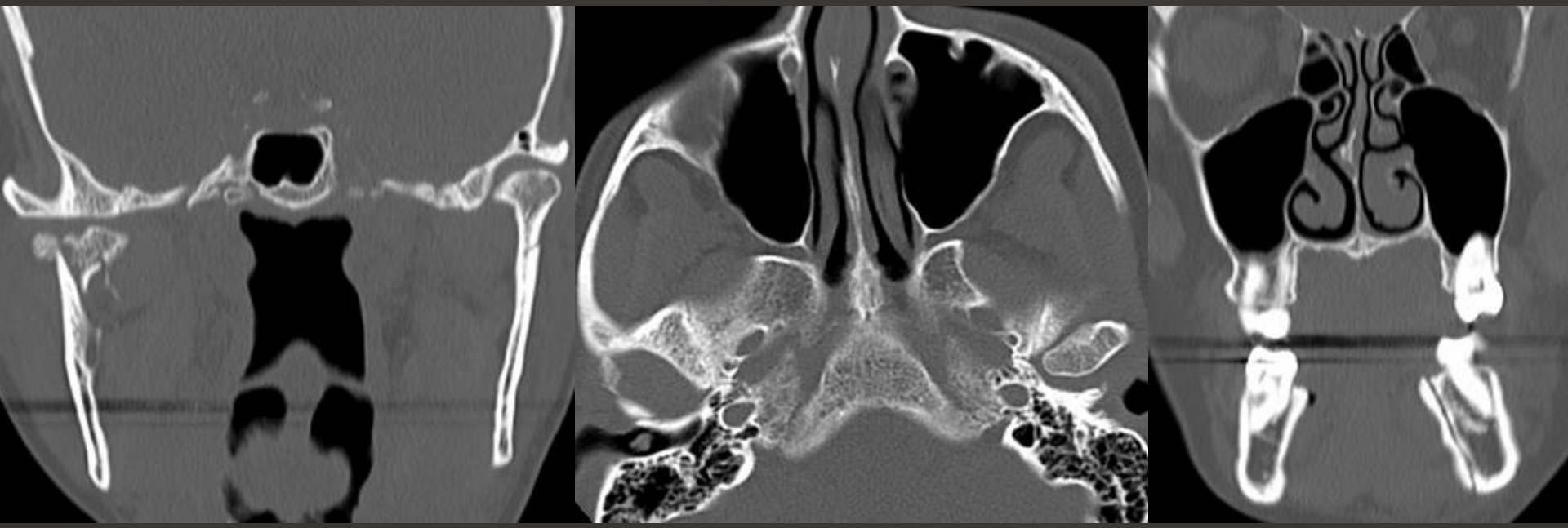
MANDIBULAR



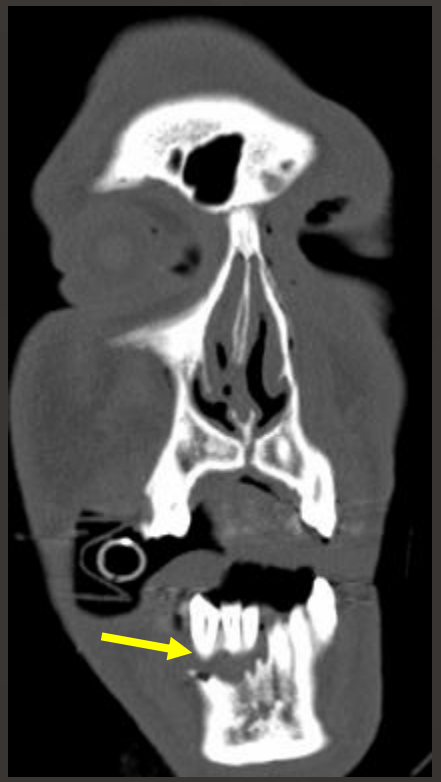




MANDIBULAR

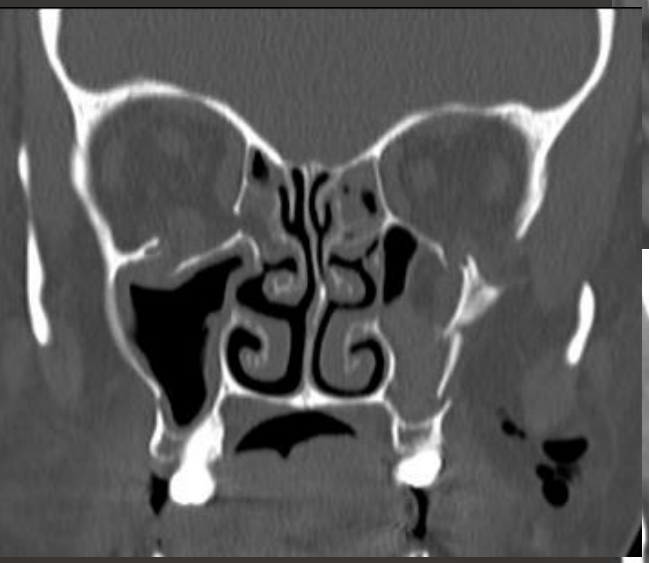


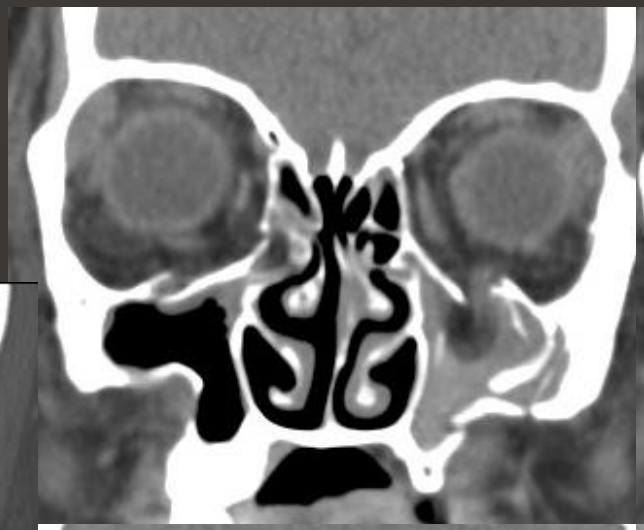
MANDIBULAR

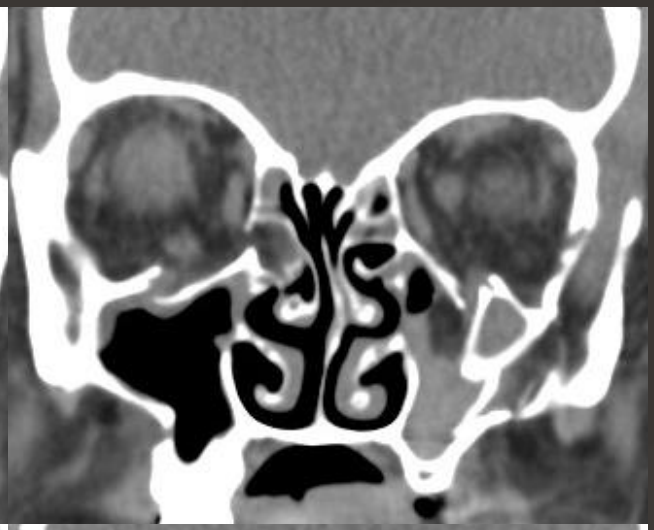


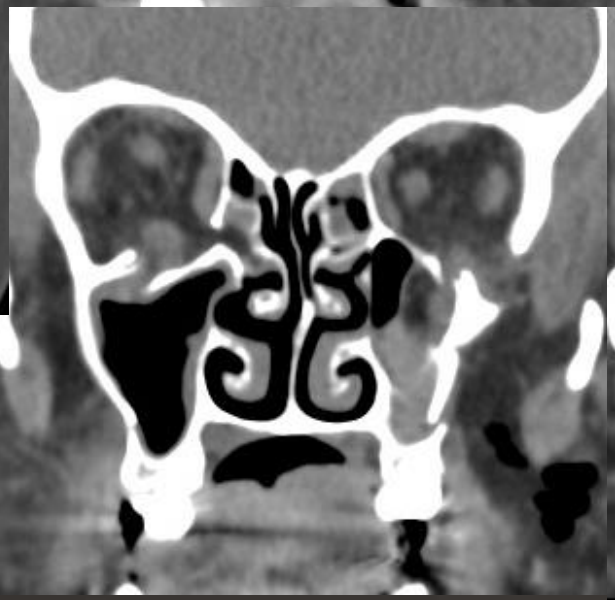
- ***Open #**: extending through alveolar ridge to oral cavity*
- ***Ring:** look for 2nd #*
- *Empty **TMJ***
- ***Teeth***

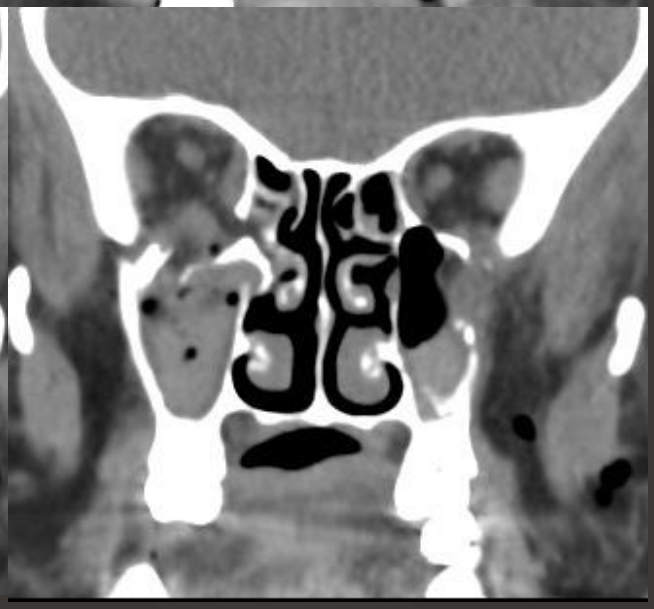
45 Y M: MVC



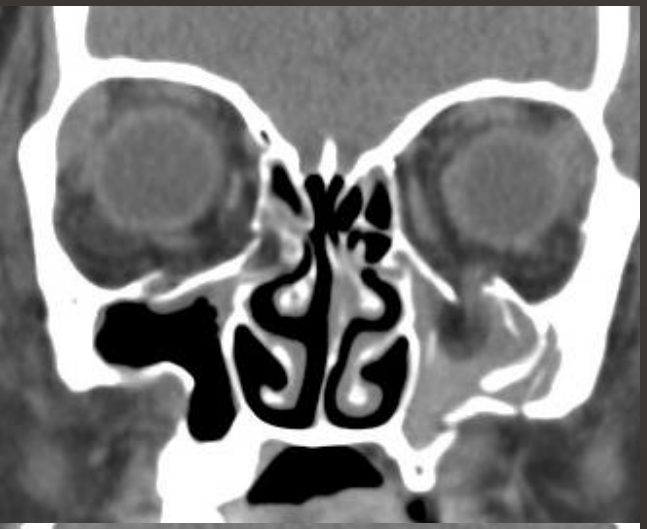


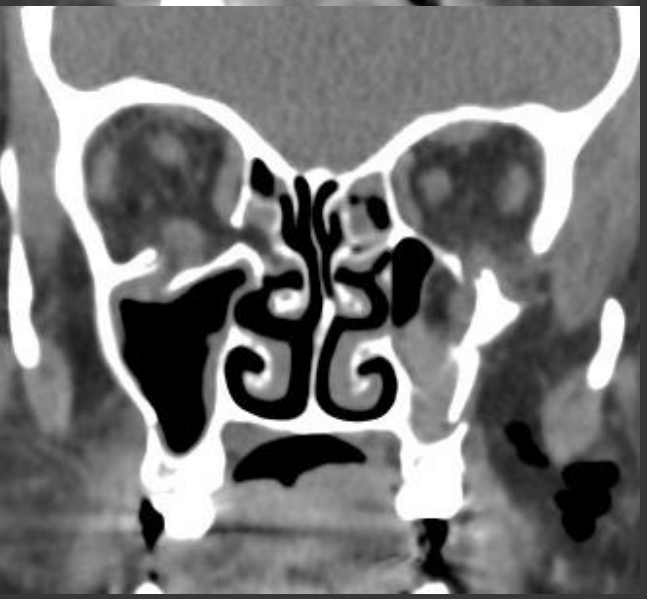




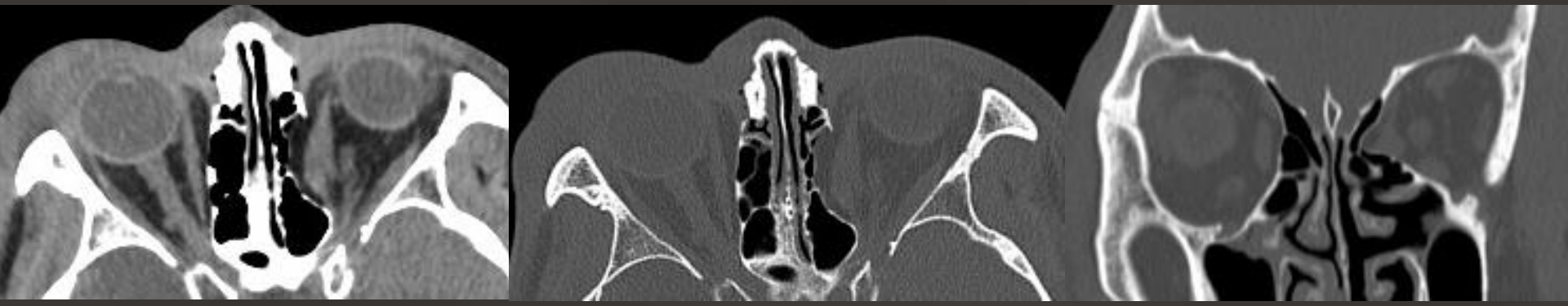


ORBITAL BLOWOUT





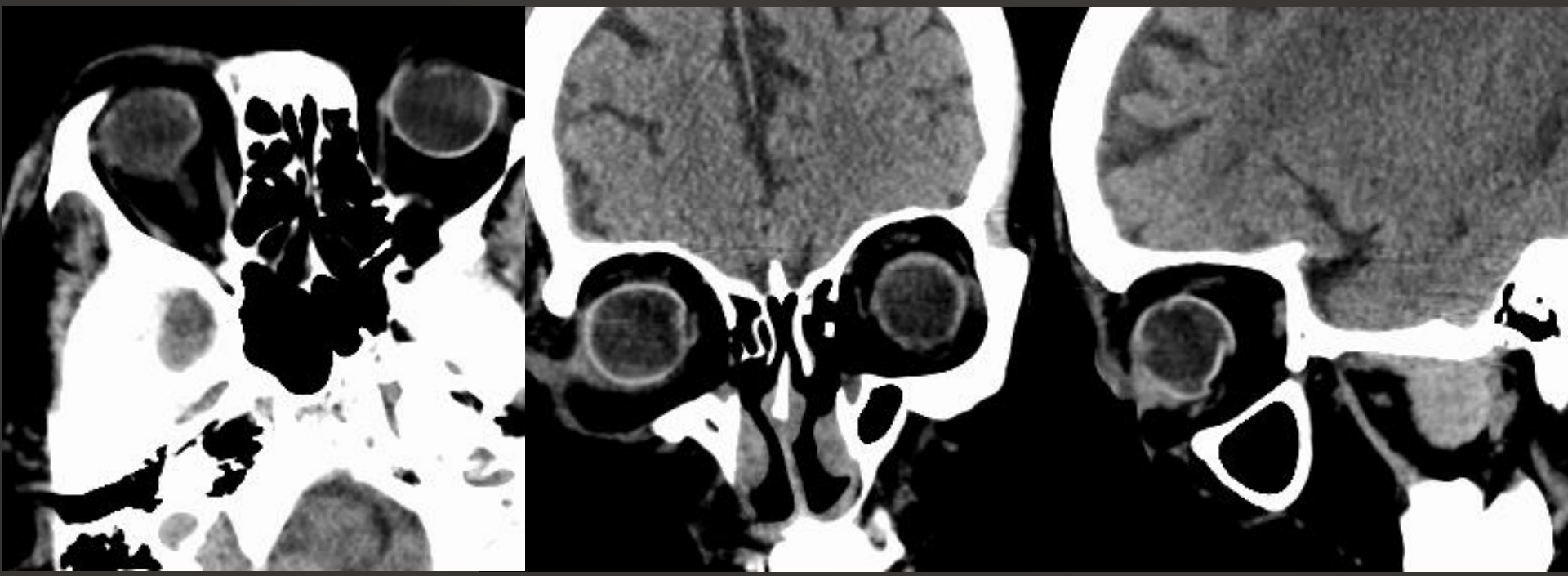
- Herniation & Entrapment
  - ✓ "Entrapment is clinical diagnosis"
  - ✓ "Functional entrapment": EOM shape/orientation
- Involvement of infraorbital canal
- Orbital rim
- Orbital soft tissue injury



MVC, correct statement:

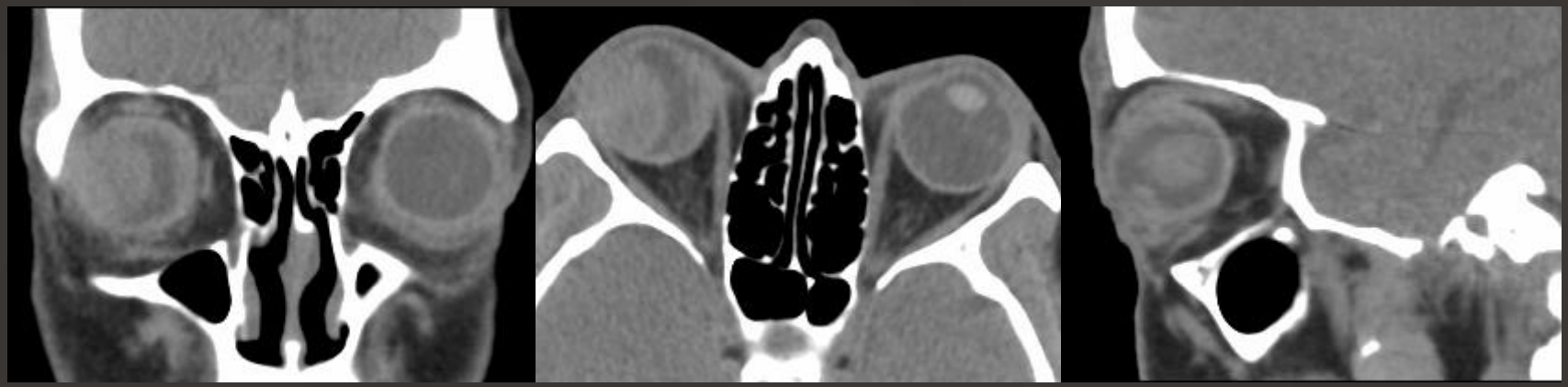
1. Right Lateral Orbital wall acute #
2. Left Medial Orbital wall acute #
3. Right Lateral Orbital wall old #
4. Left Medial Orbital wall old #

45 Y M: MVC



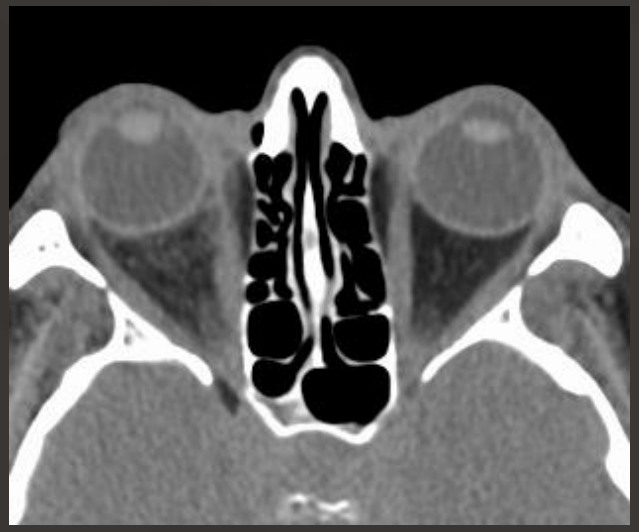
GLOBE RUPTURE

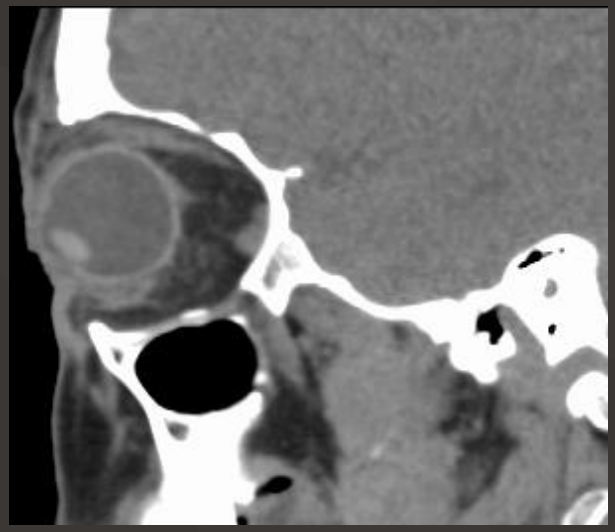
Companion case



GLOBE RUPTURE & HGE

Companion case





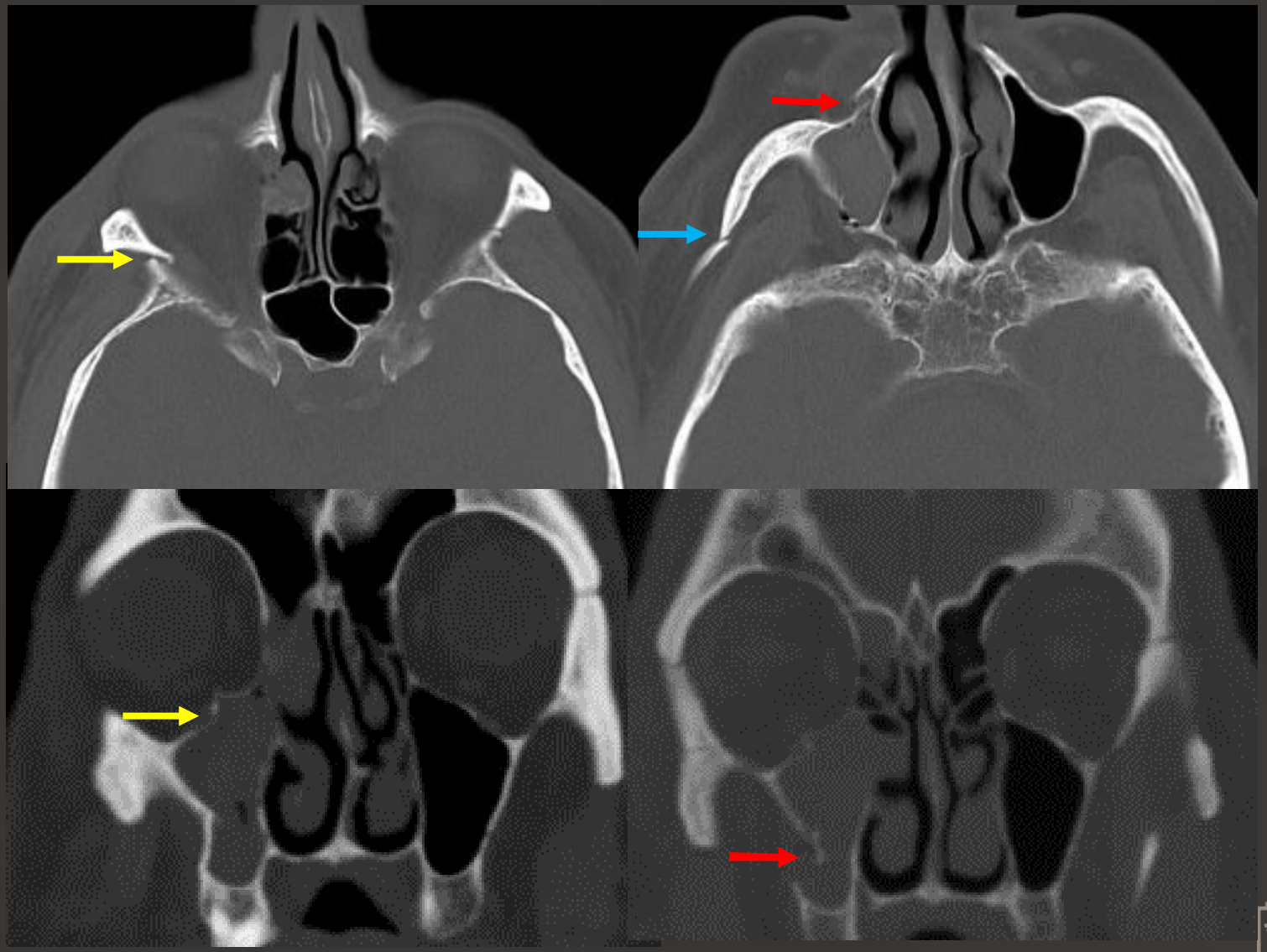
RIGHT

TRAUMATIC LENS DISLOCATION

ORBITAL SOFT TISSUE INJURY

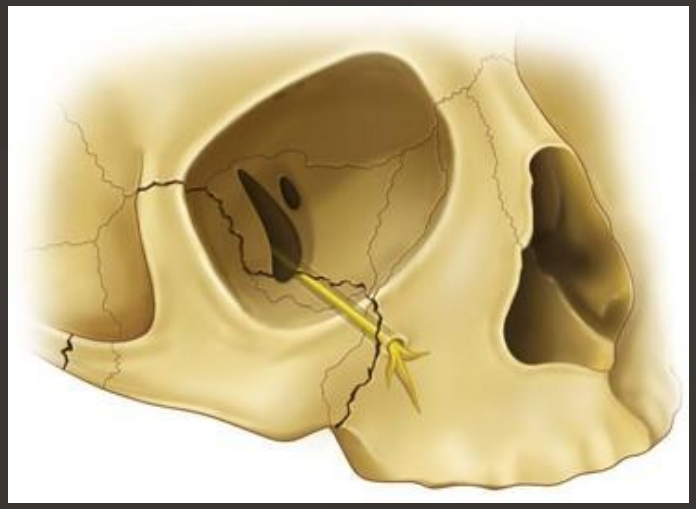
- Globe rupture
- Lens dislocation
- Retrobulbar hge*
- Occular hge
- FB
- Orbital emphysema

45 Y M: MVC



NAME THE #

Zygomatico-Maxillary Complex Fracture

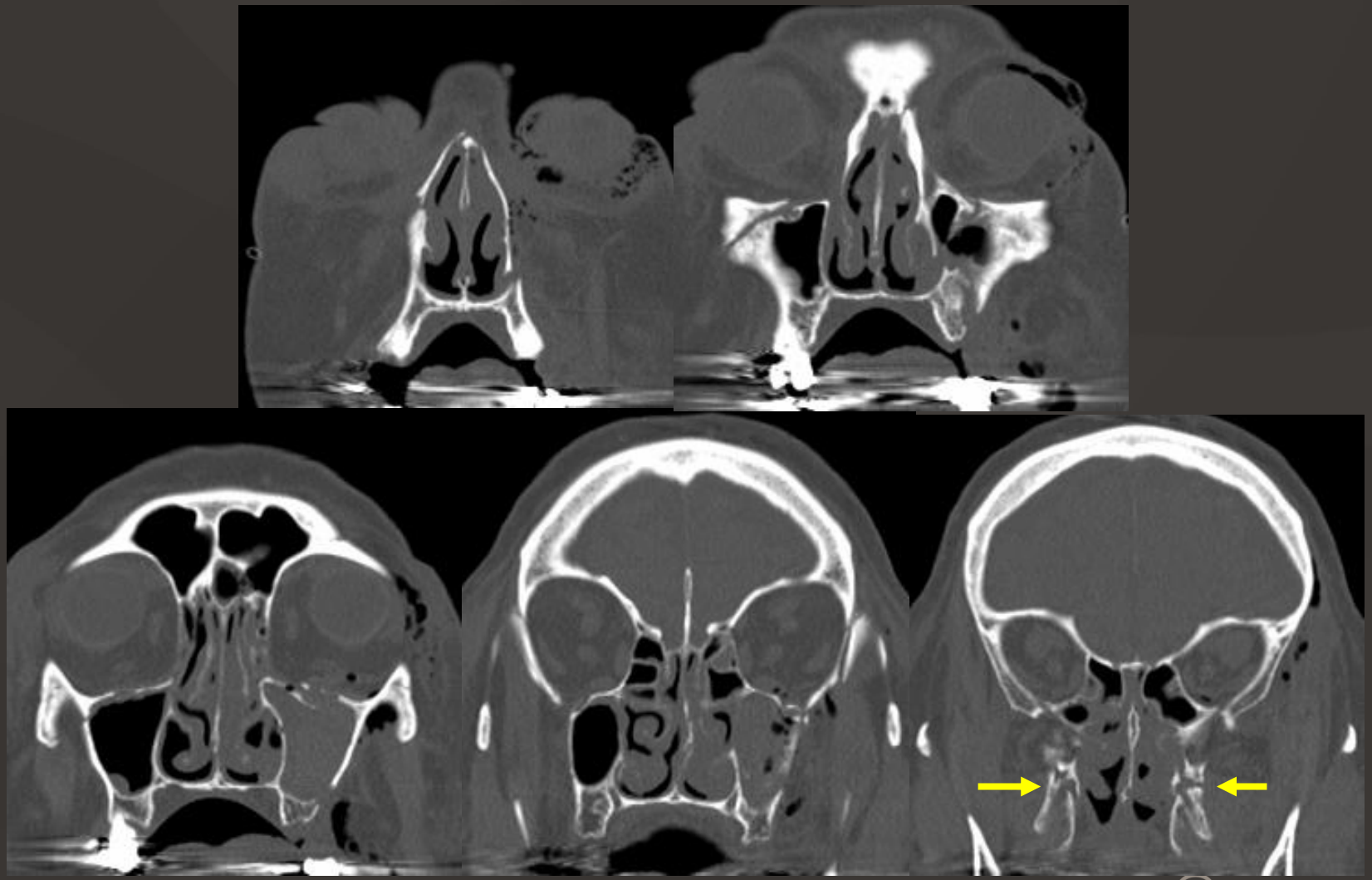


TRIPOD Vs "TETRAPOD"

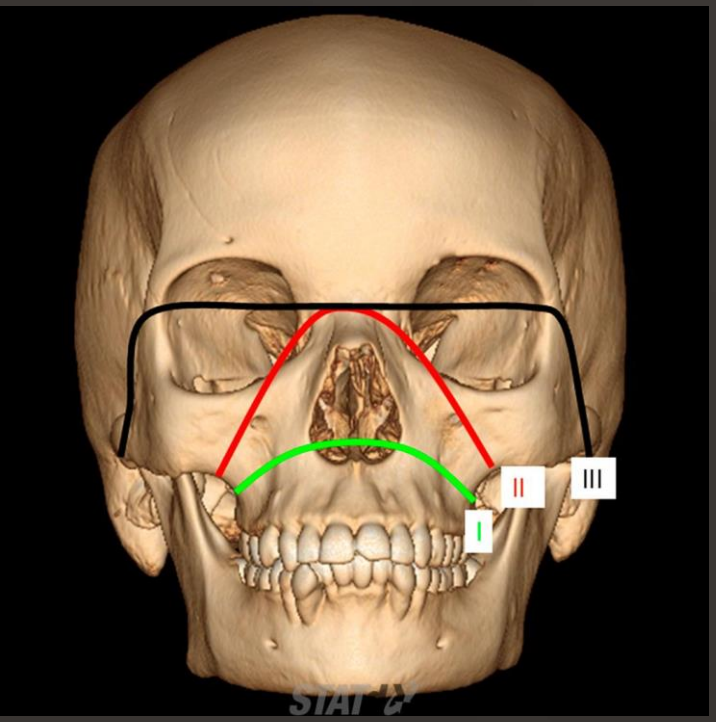
1. Zygomatic arch
2. Lateral orbital wall
3. Orbital floor
4. Anterior & lateral walls of maxillary sinus

45 Y M: MVC

NAME THE



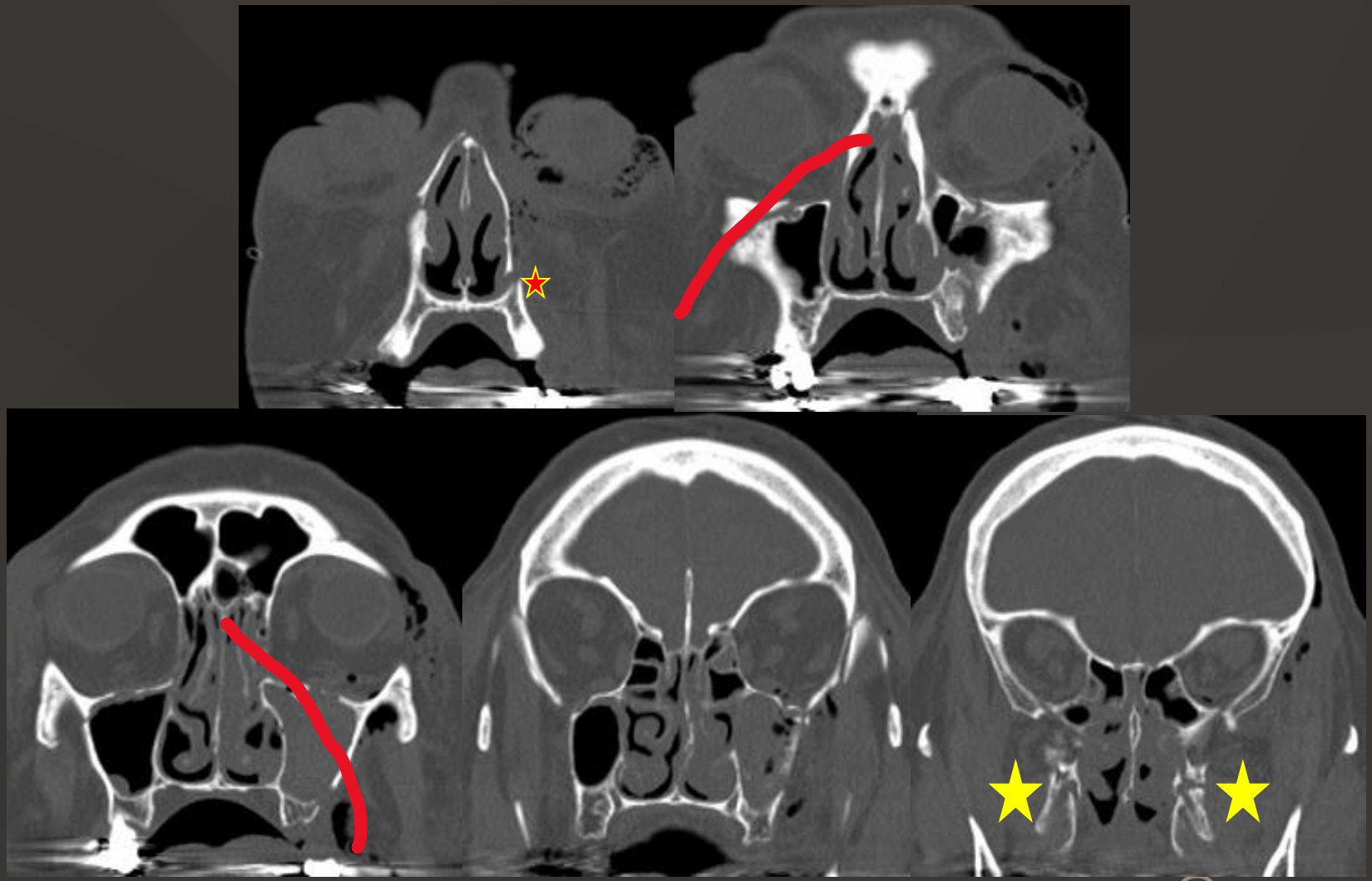
Le Fort (Transfacial)



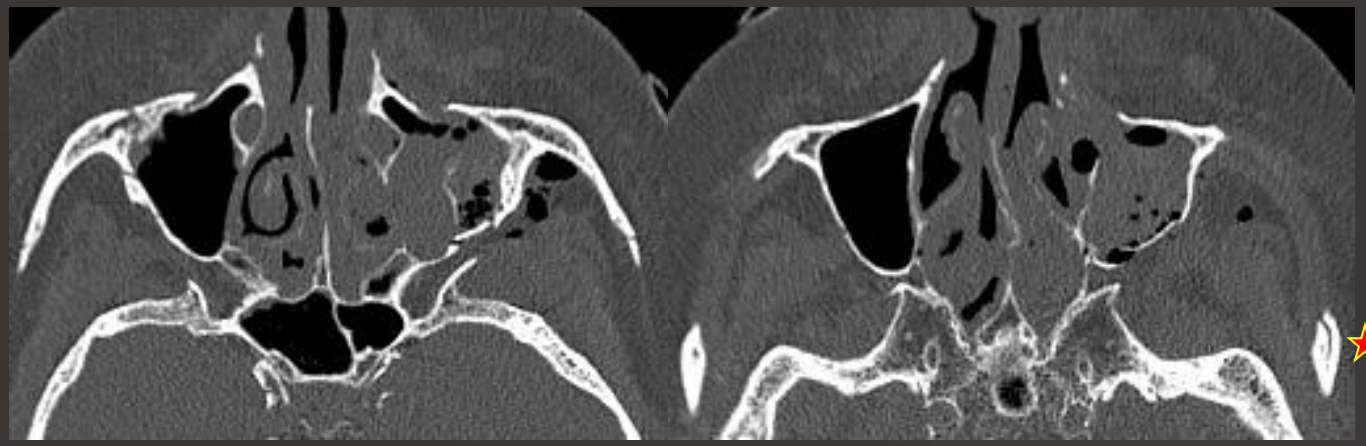
- **PTERYGOID PLATES!!!!!!!**

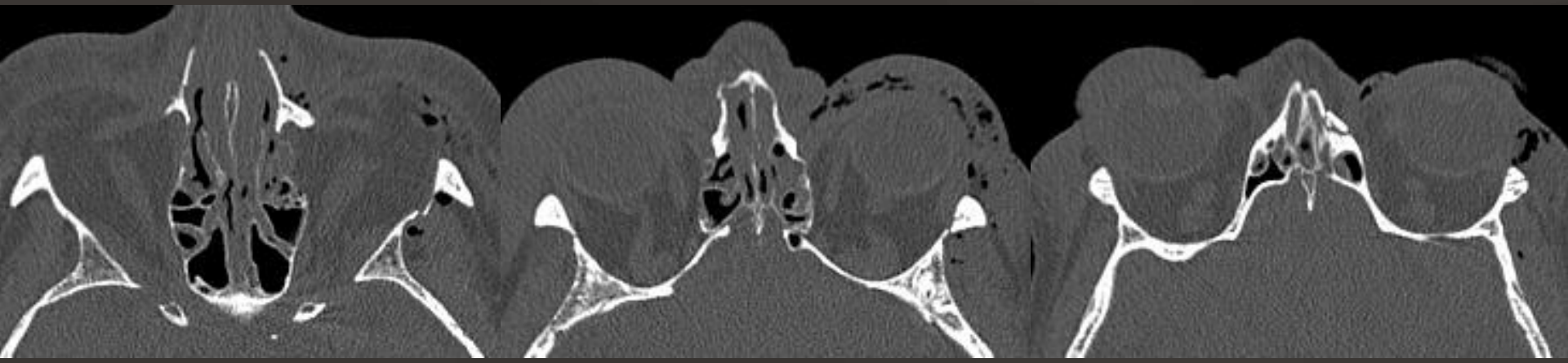
- **Type I: "Floating palate”**
  (lateral nasal aperture)
- **Type II: "Pyramidal fracture”**
  (Inferior orbital rim)
- **Type III: "Craniofacial dissociation”**
  (Zygomatic arch)

- Mixed!
- II: most common
- CT angio!



NAME THE





SUMMARY

- Skull # scout and reformats
- DAI: clinical Vs imaging
- IV hemorrhage
- EDH Venous variant
- Pneumocephalus!
- Pneumolabyrinth
- Soft tissue orbital injury
- Mandibular #: Open-ring
- Facial #s

Thank you

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