

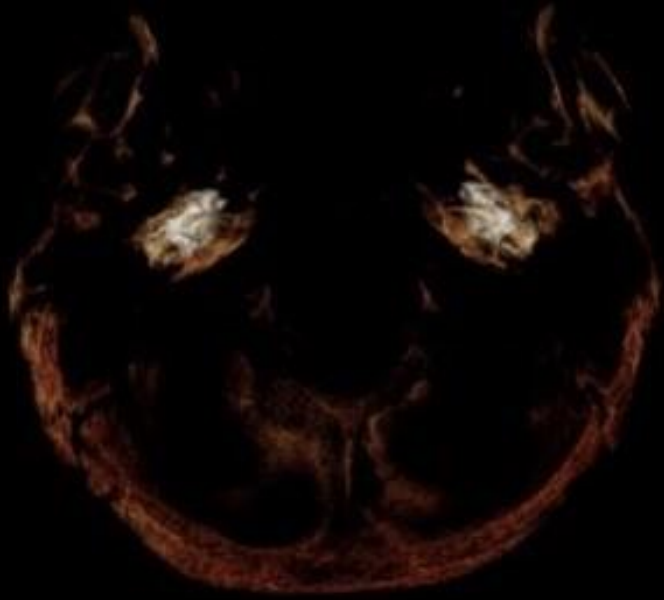
Temporal Bone Fractures



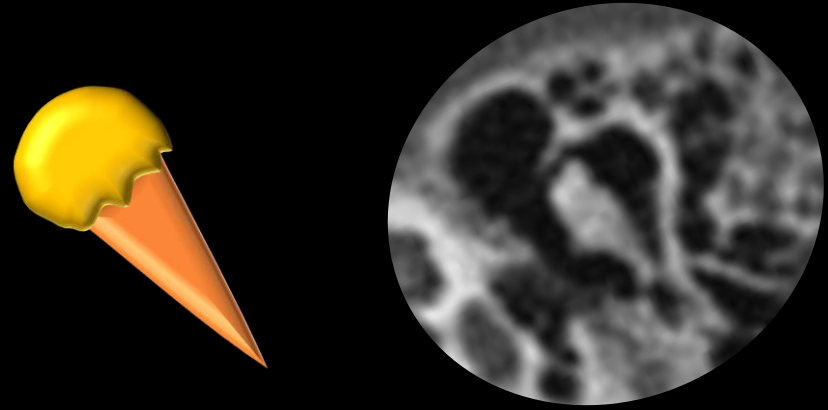
Susanna C. Spence, MD
Professor
UTHealth McGovern Medical School at Houston

Nothing to Disclose

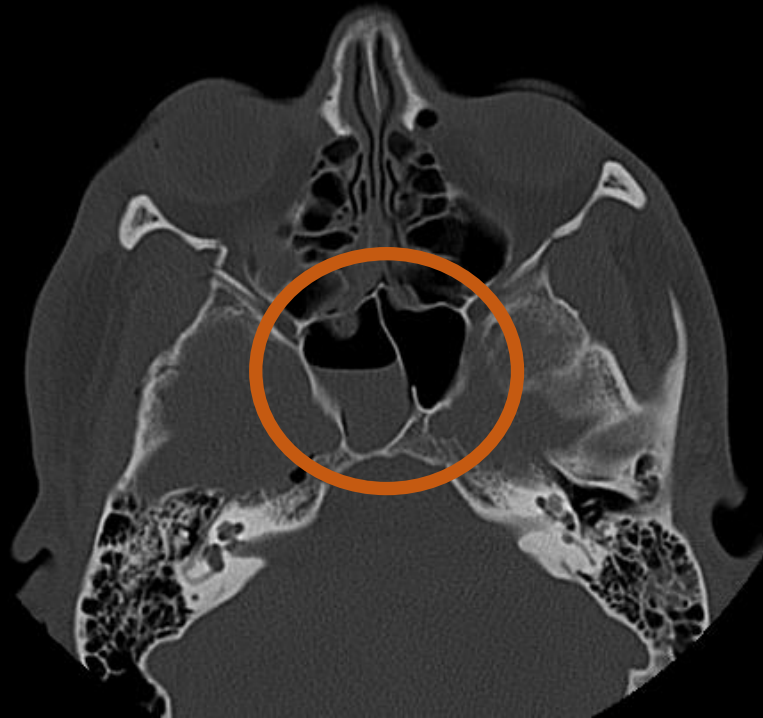
Otic capsule



Ossicles



Watch this space



Temporal bone: 5 parts

Squamous

Mastoid

Tympanic

Styloid

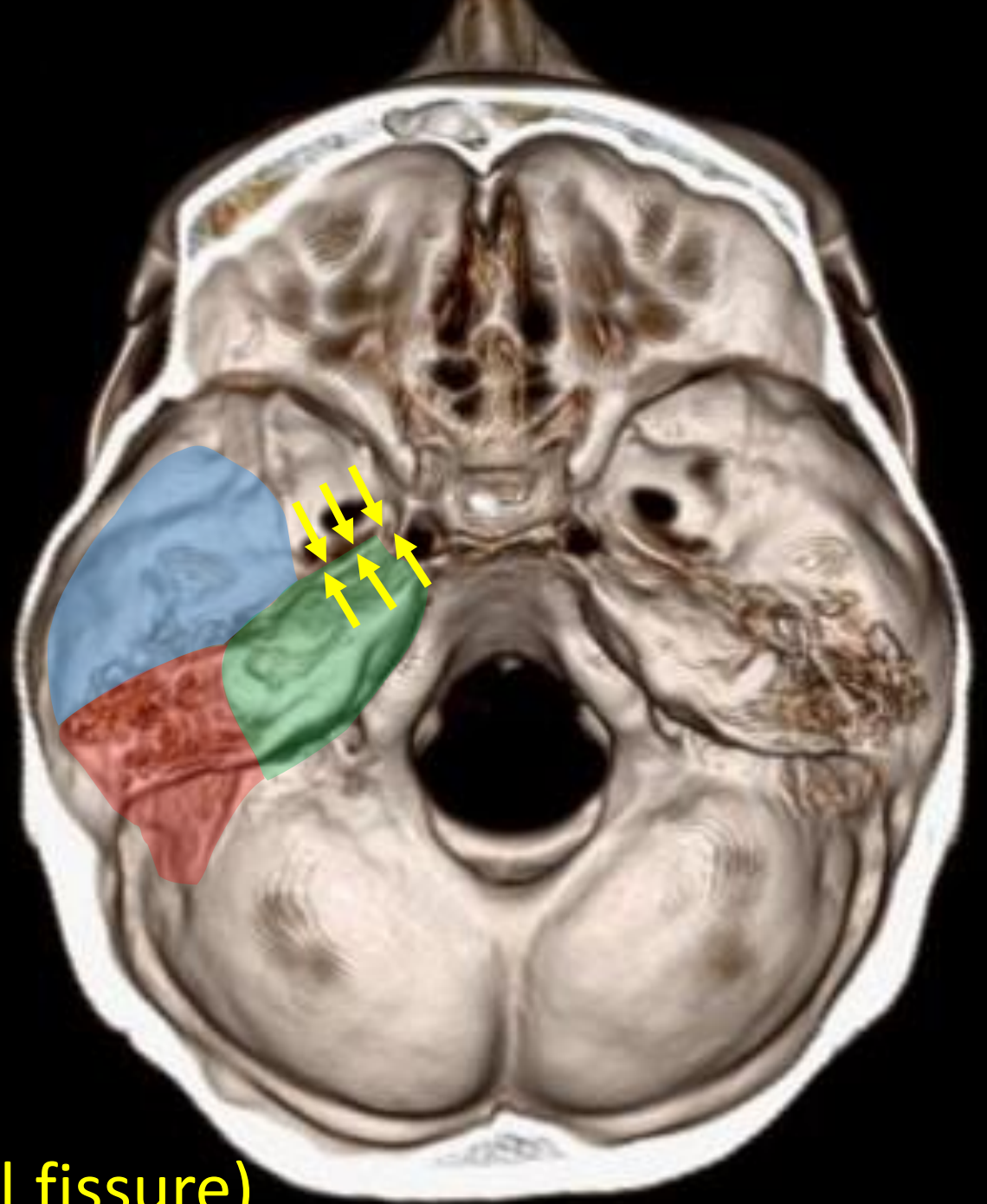


Temporal bone: 5 parts

Petrous

Mastoid

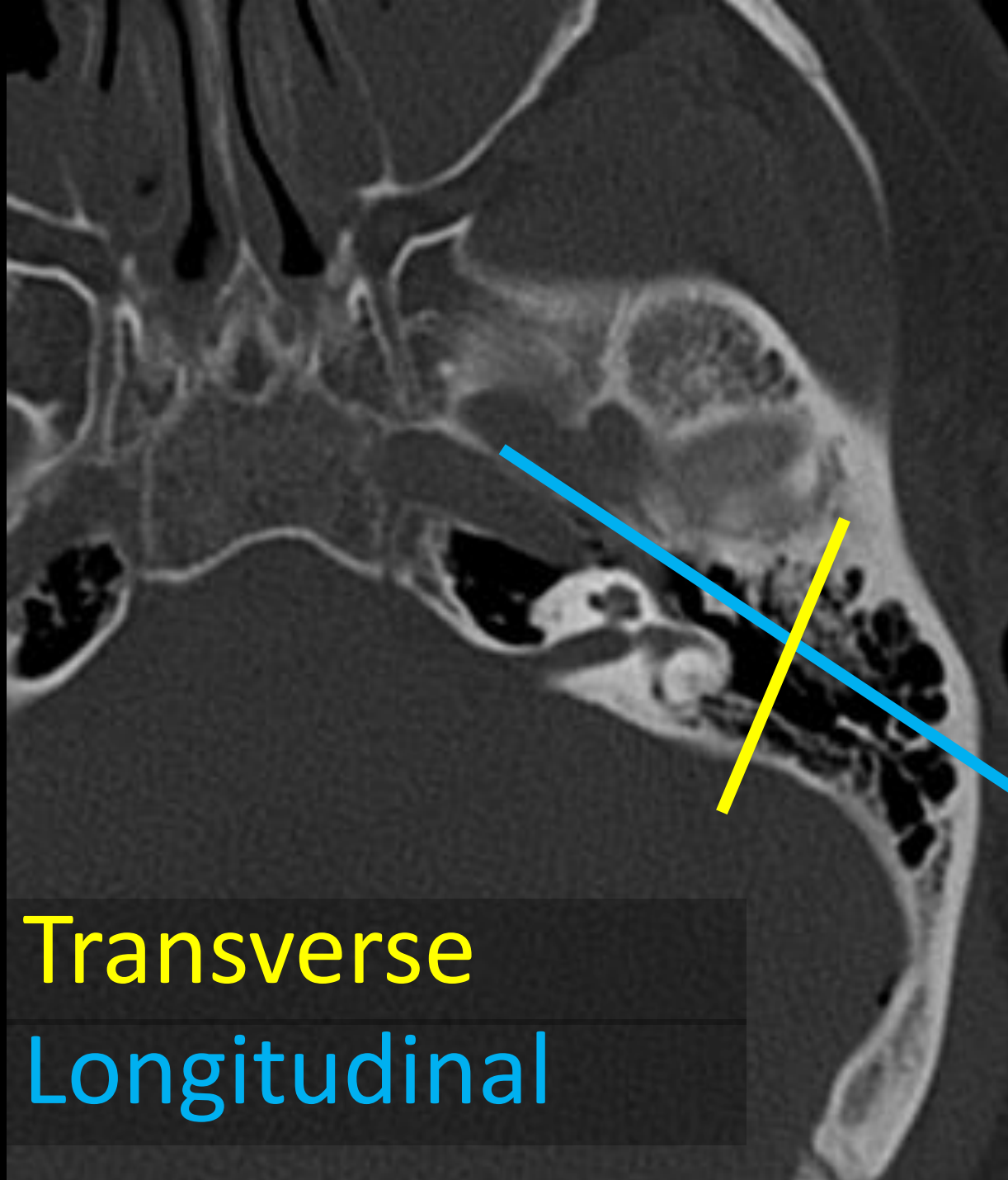
Squamous



*The “railroad” (sphenopetrosal fissure)

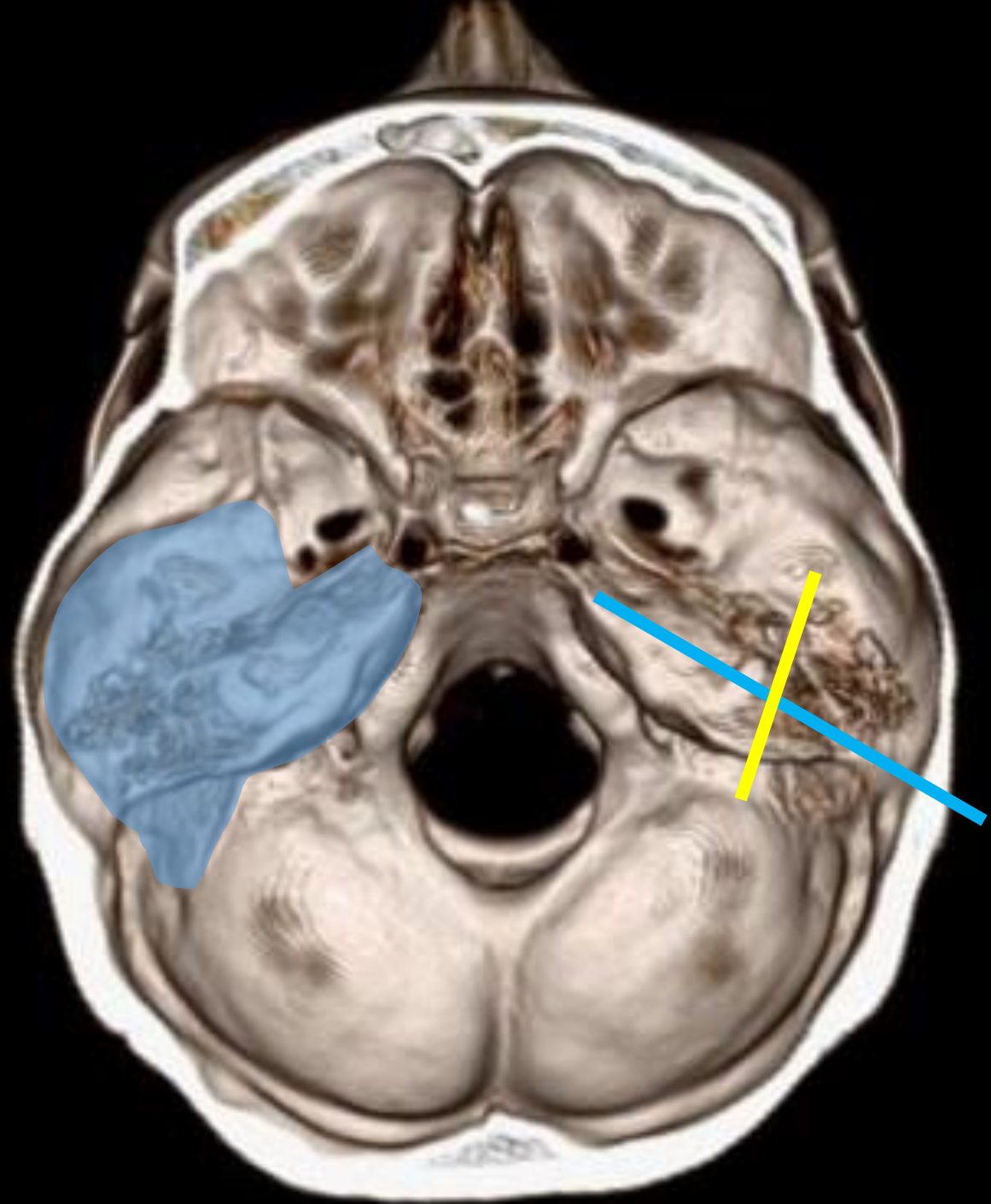
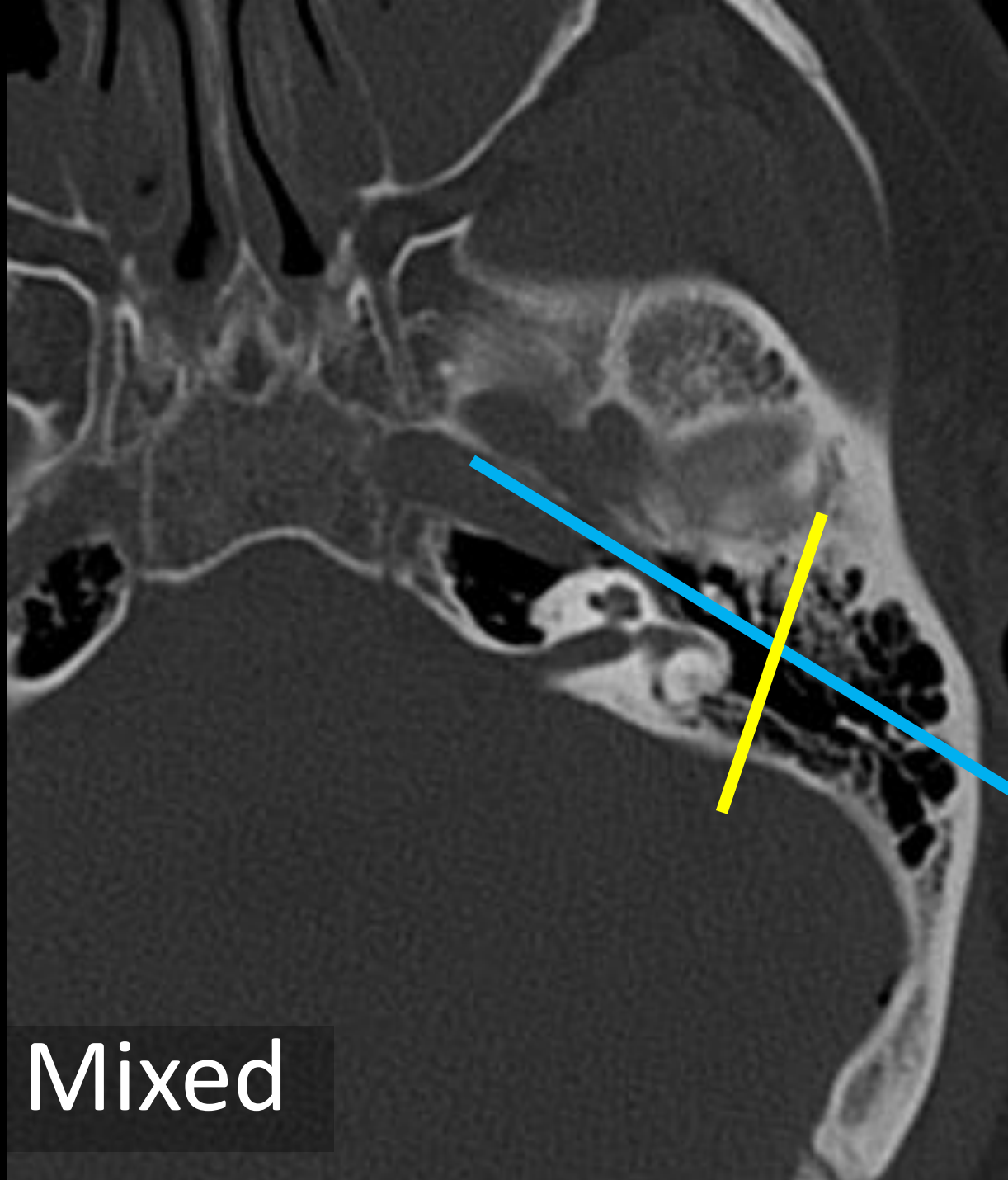
Temporal bone fracture classification

The traditional way...

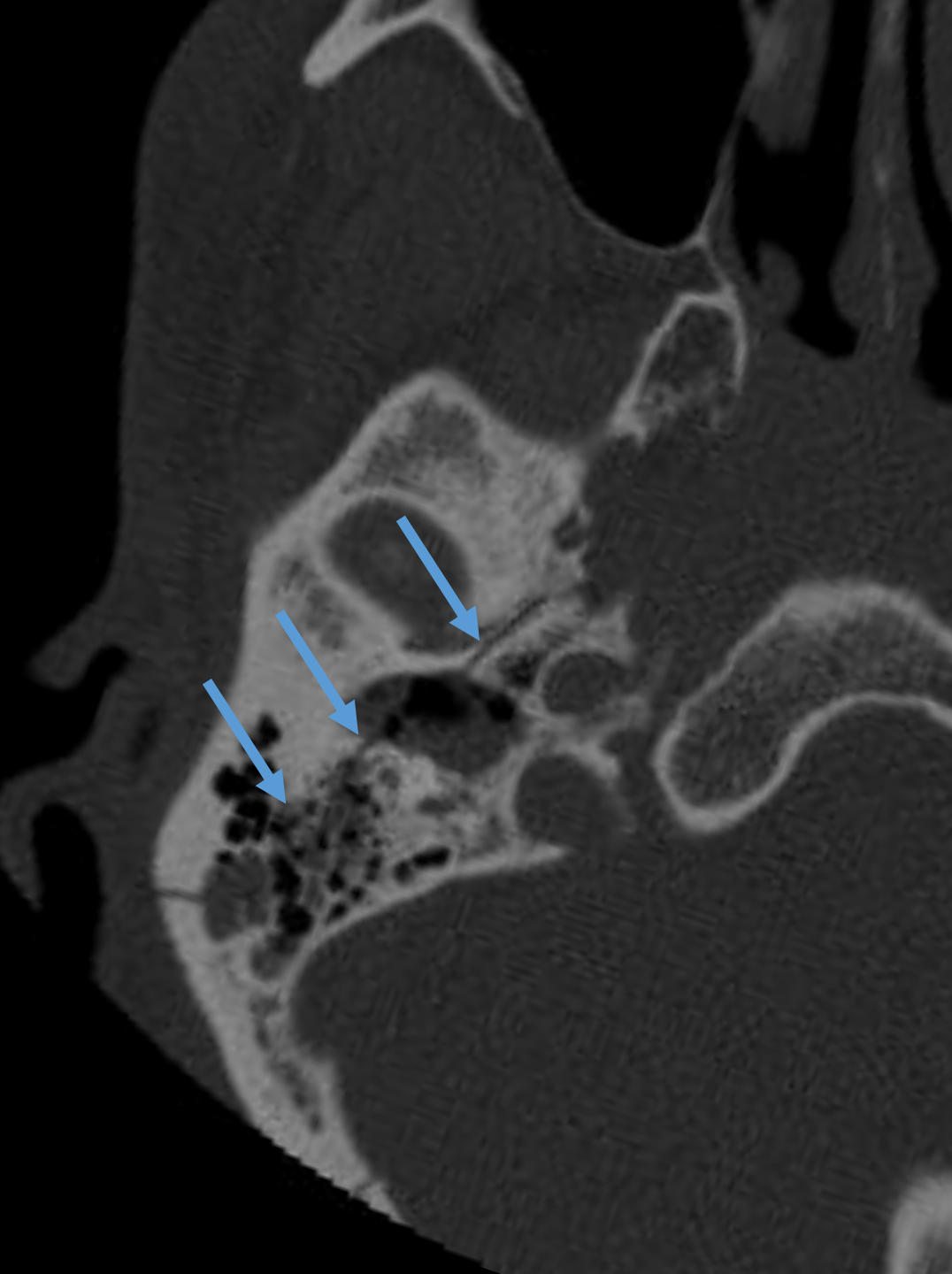


Transverse
Longitudinal





Mixed



But that simple classification based on fracture orientation doesn't provide much prognostic information

So what DOES?

- Otic capsule involvement
- Ossicular dislocation/frx
- Facial nerve involvement
- Encephaloceles
- Entrapped skin fragments → cholesteatoma

The why...

→ Otic capsule involvement

→ Ossicular dislocation/frx

↑↑ risk of sensorineural hearing loss, CN7 injury & CSF fistula

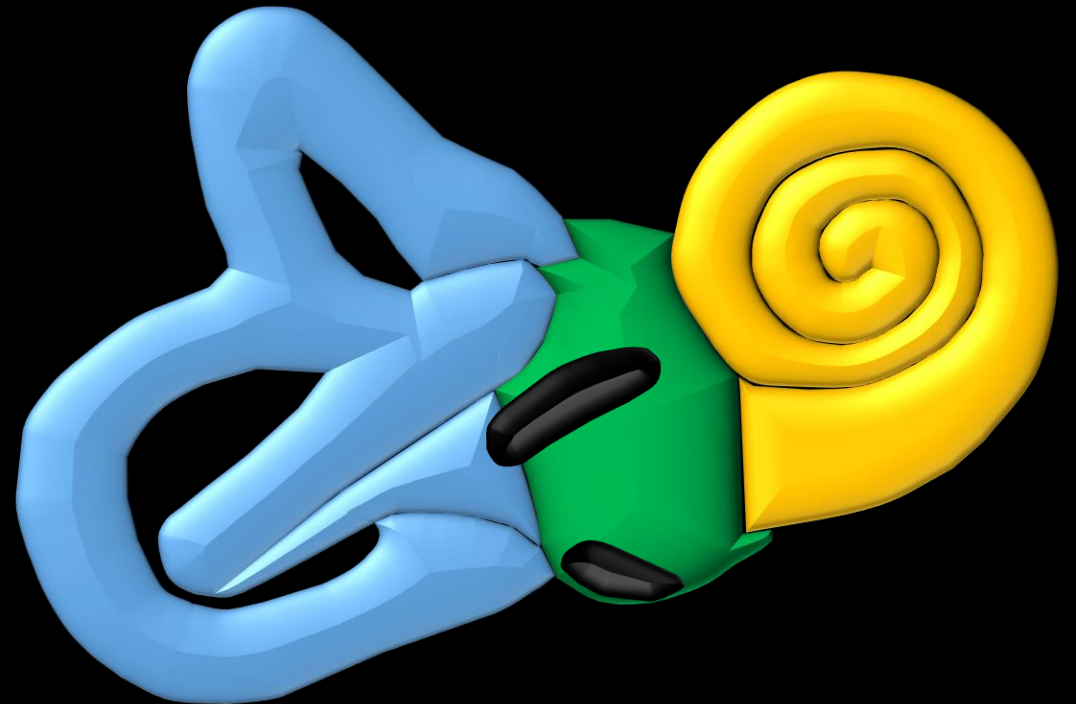
A source of conductive hearing loss and potentially repairable!

Otic capsule involvement

- Otic capsule violating/disrupting
- Otic capsule sparing

Anatomy: the OTIC CAPSULE

1. Semicircular canals (anterior, posterior, lateral)
2. Vestibule
3. Cochlea

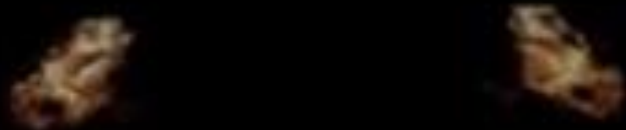


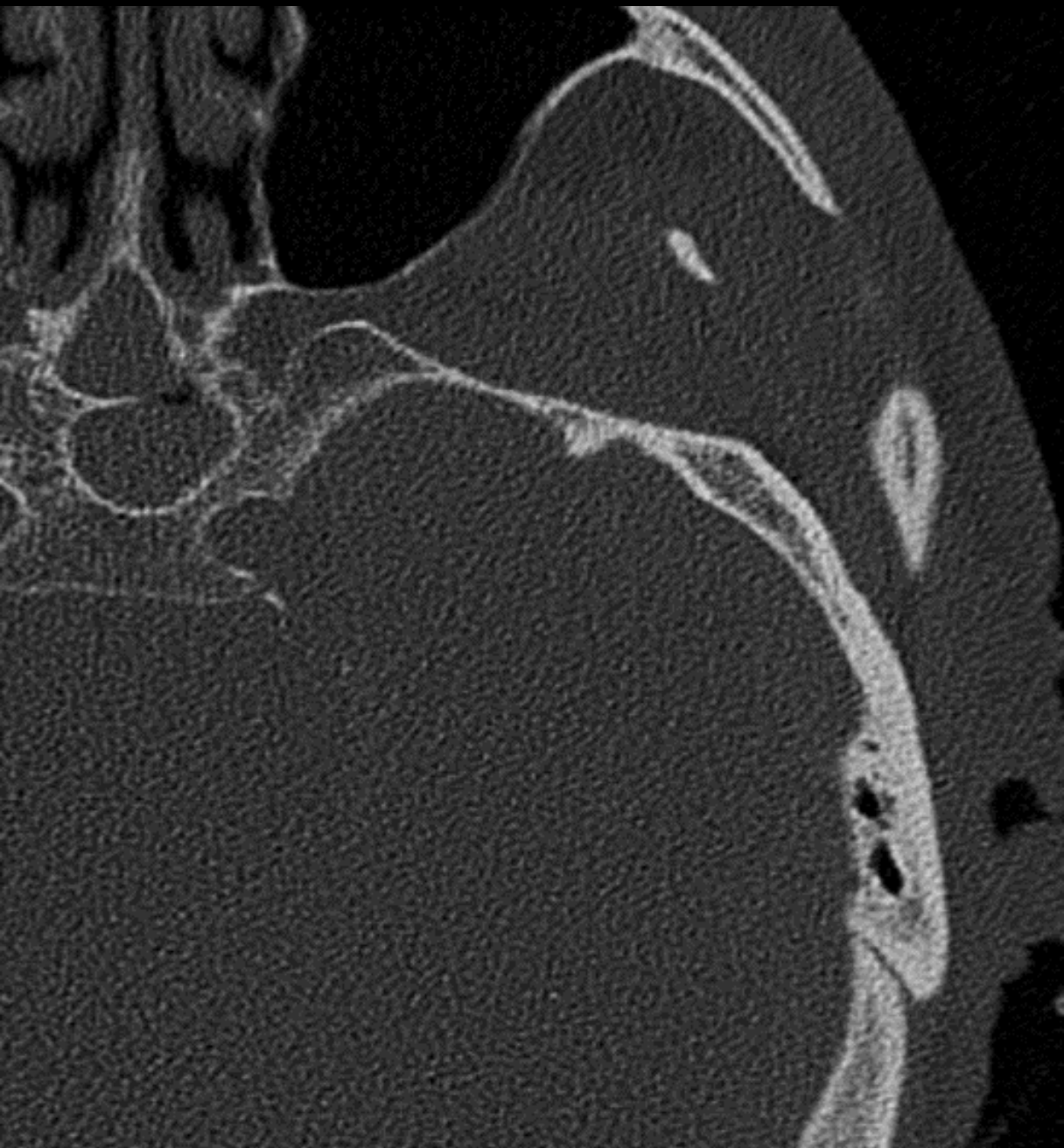
System doesn't actually ask what **part** is involved...!

Otic capsule involvement

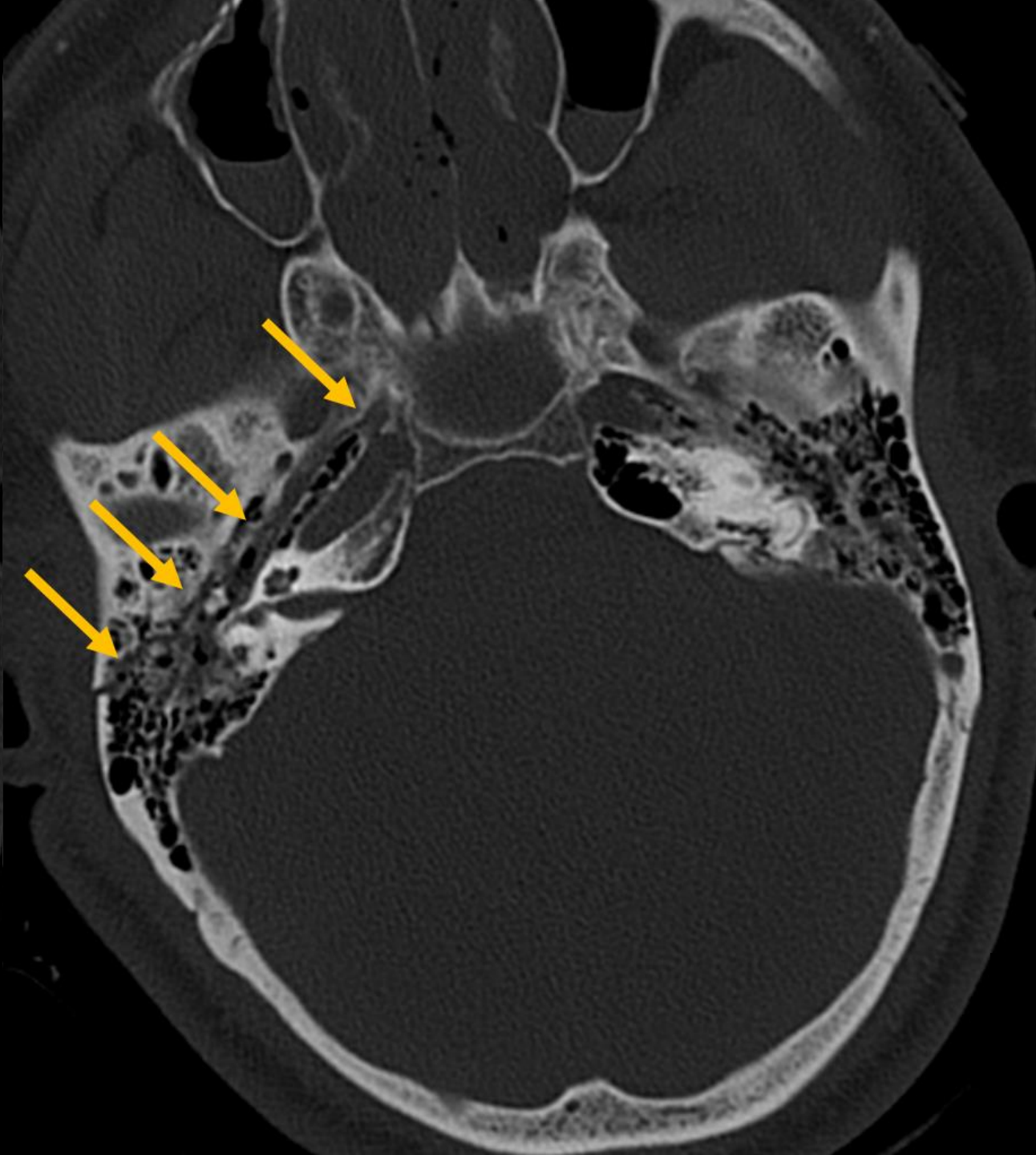
- Otic capsule violating/disrupting
- Otic capsule sparing

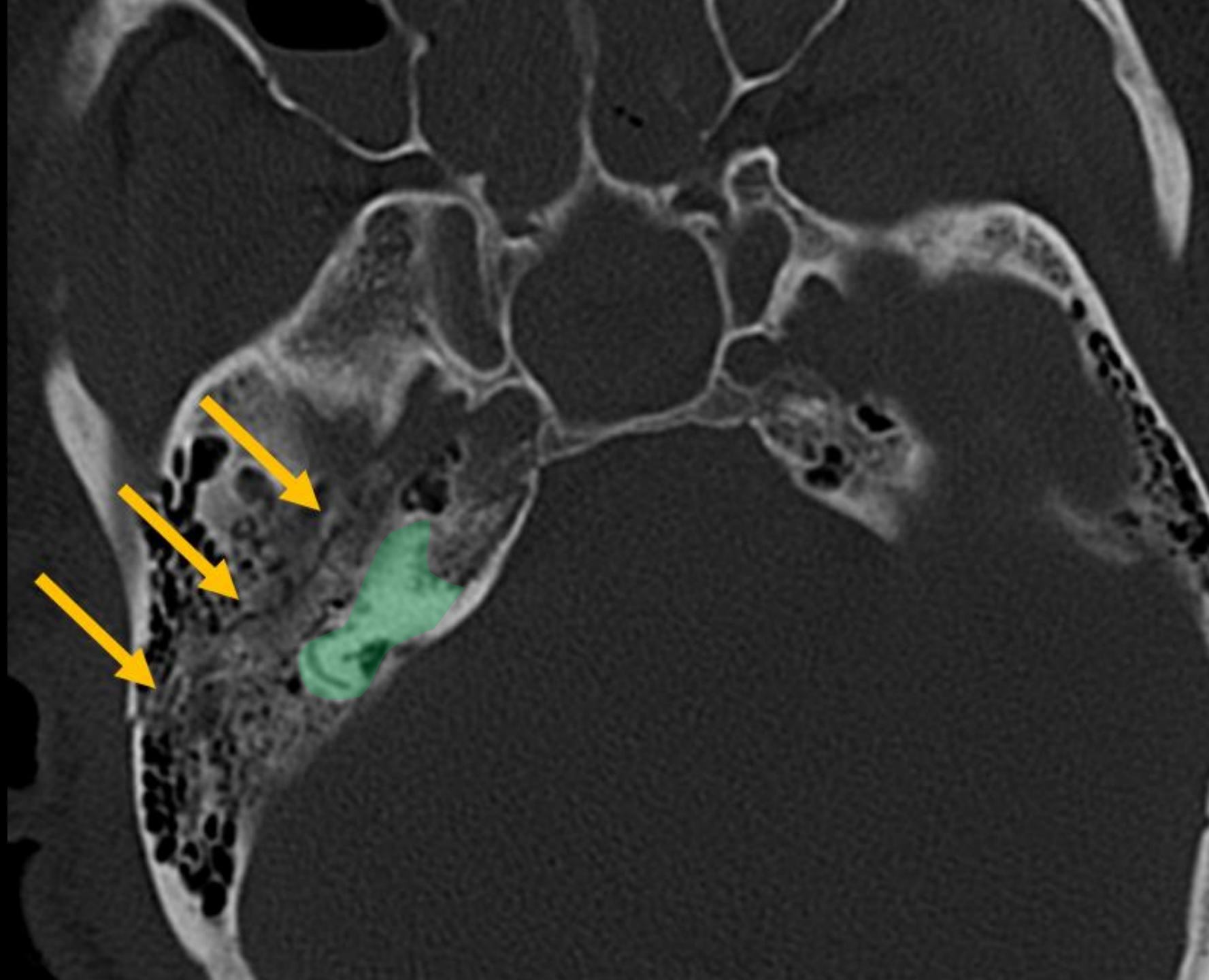
THIS is what happens, when you take a 3D skull image and **window it down**.

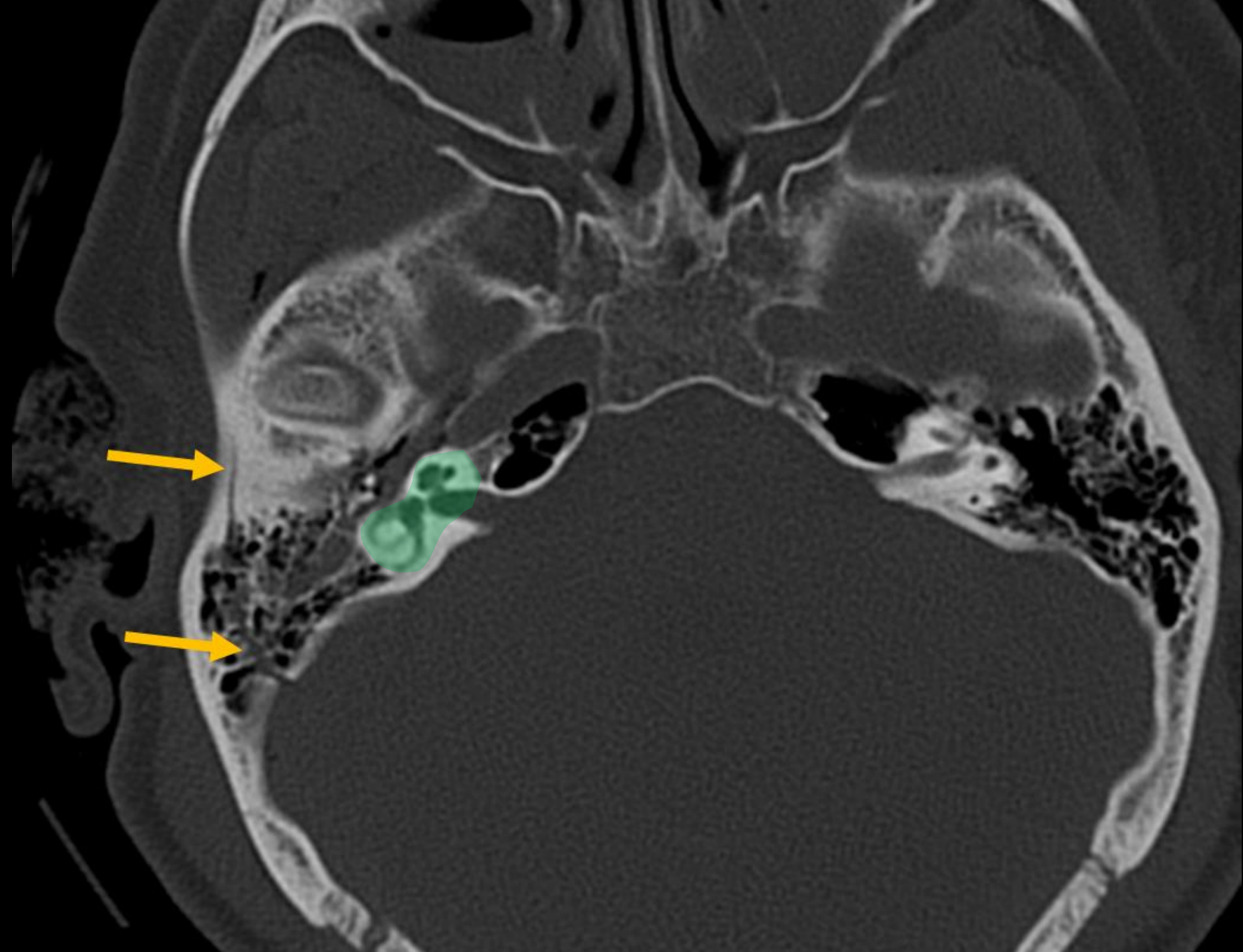




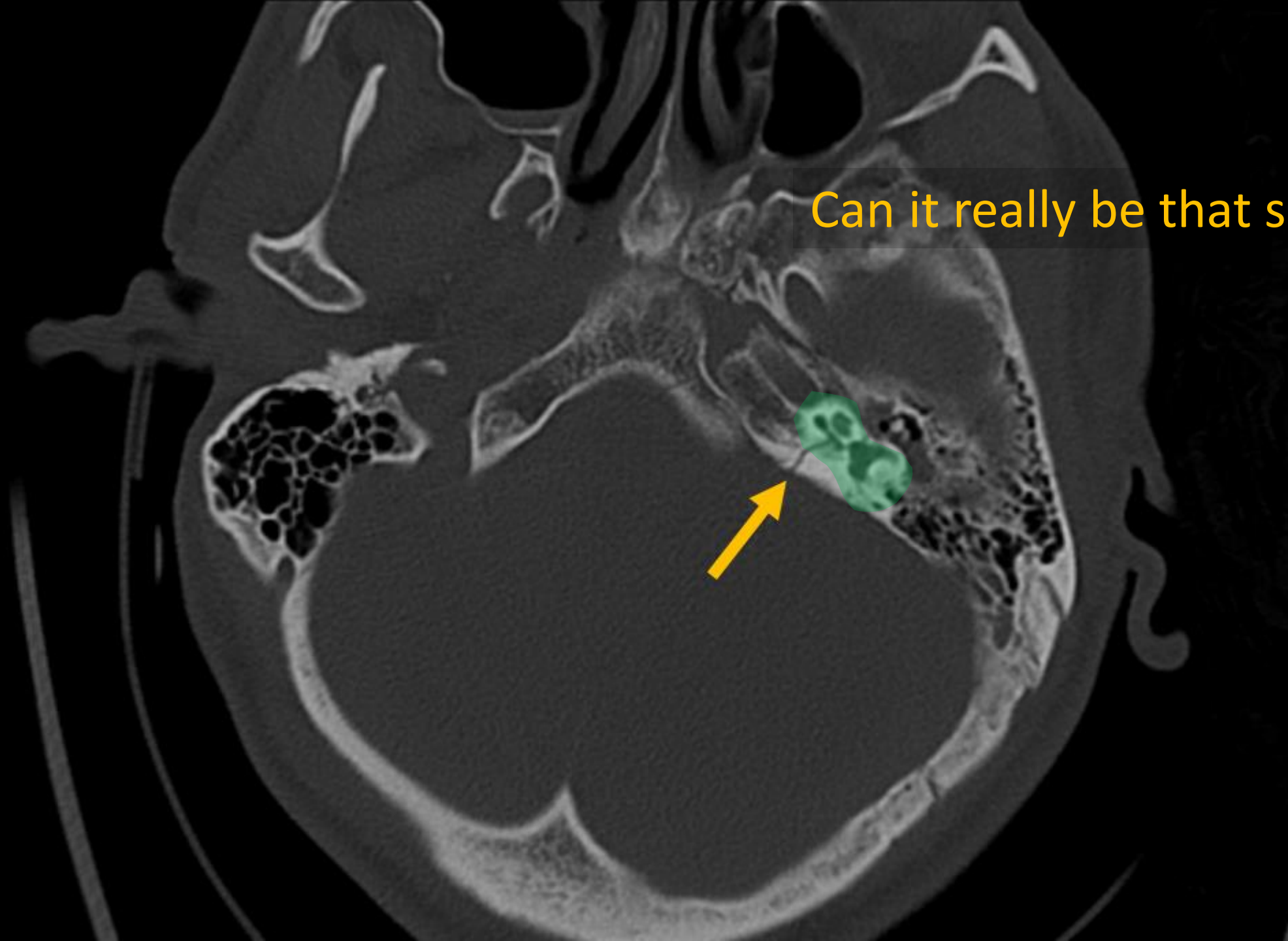
Let's try this out

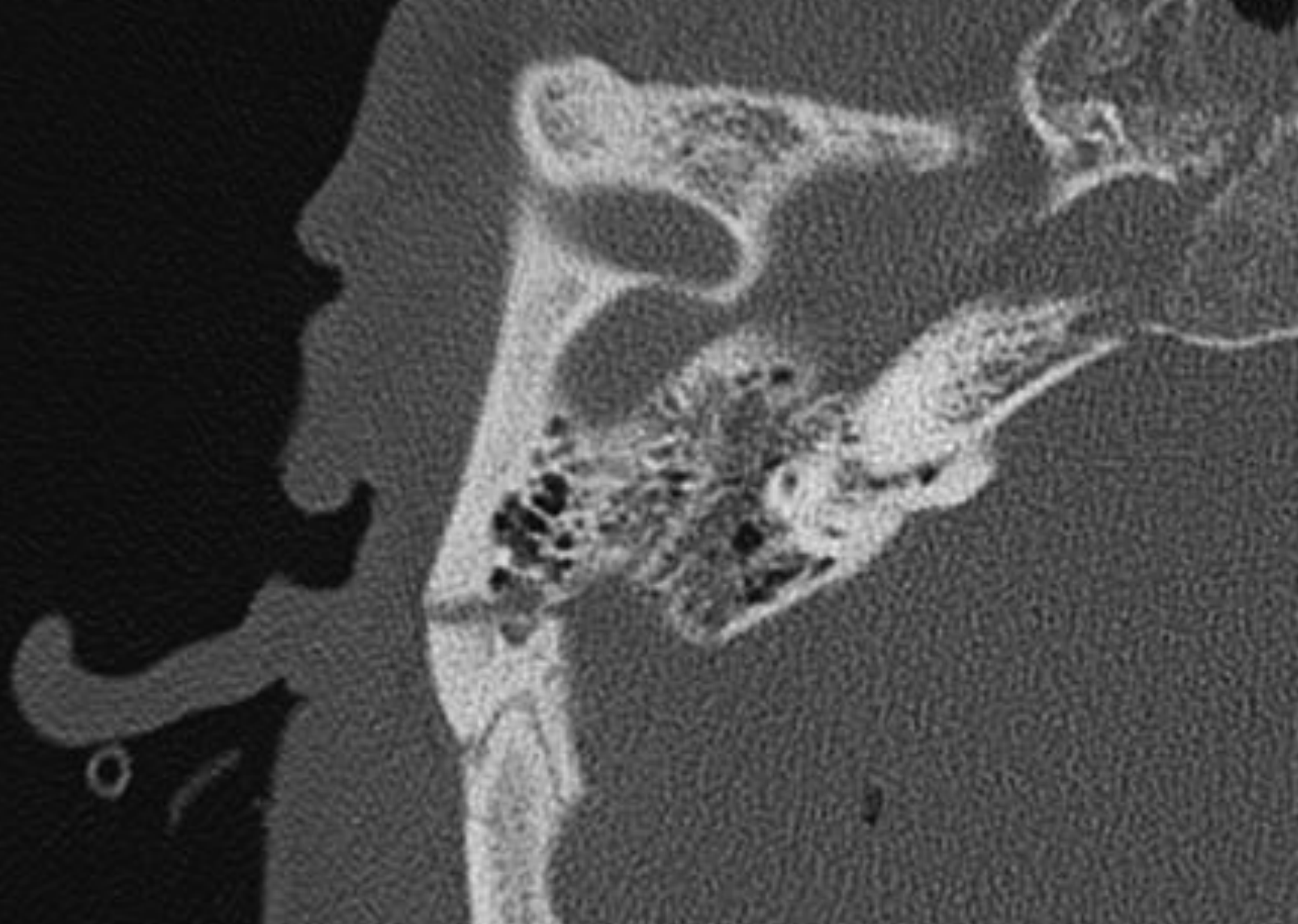




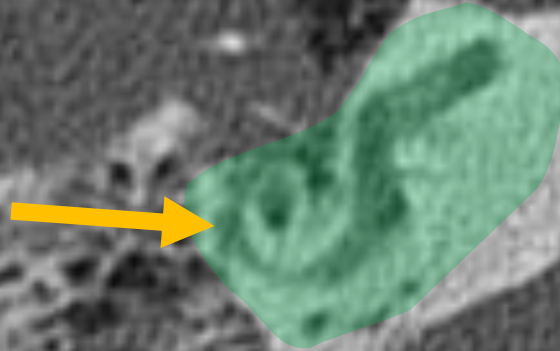


Can it really be that simple?



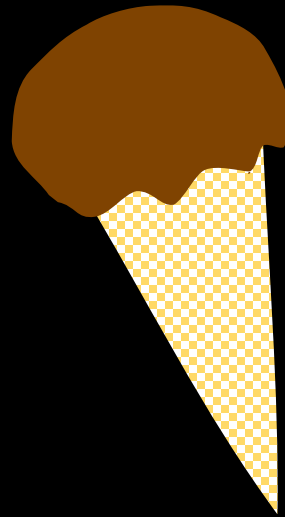


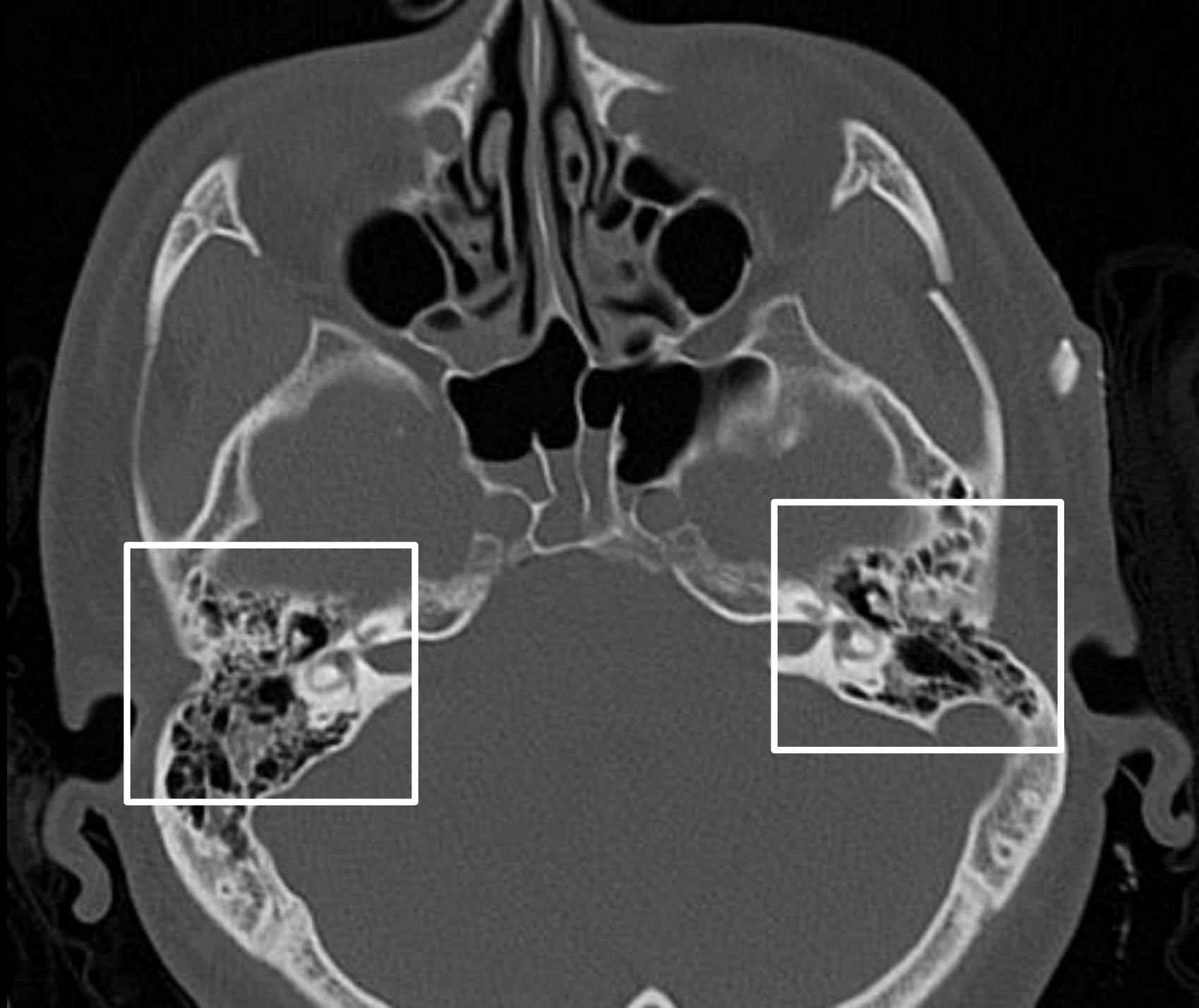
That's a hard as I can make it!

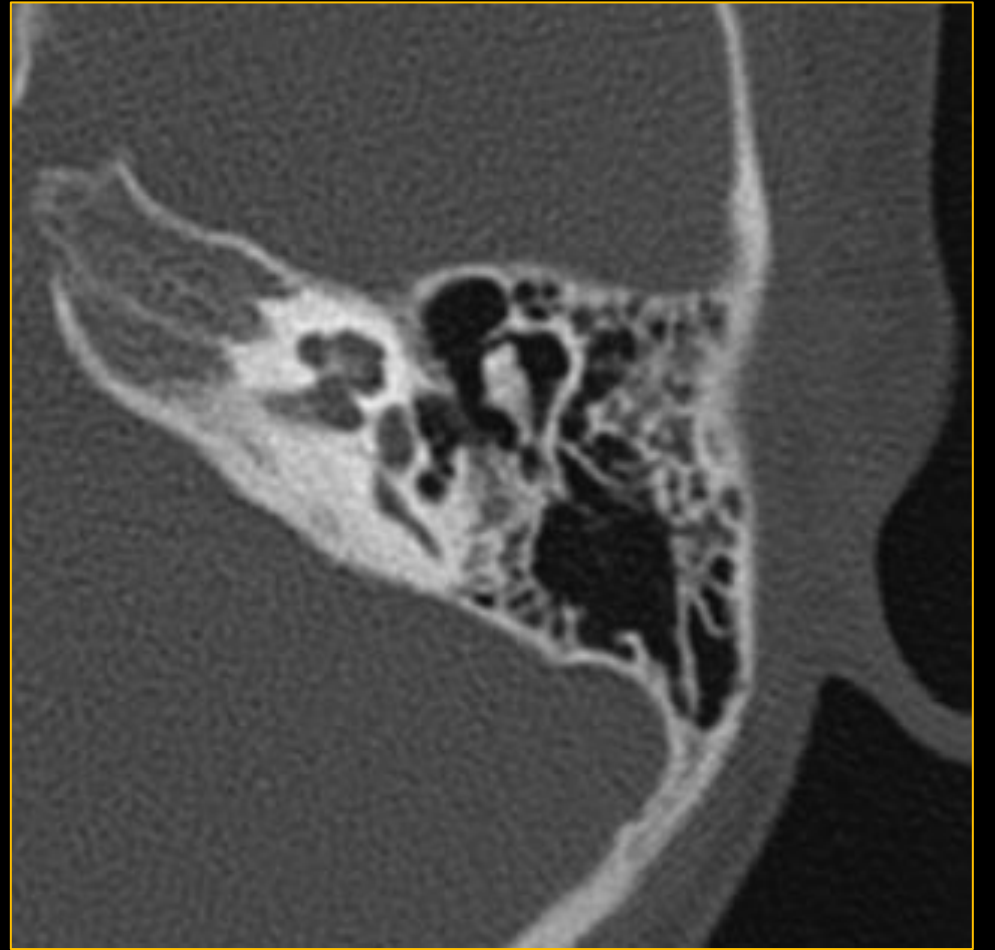
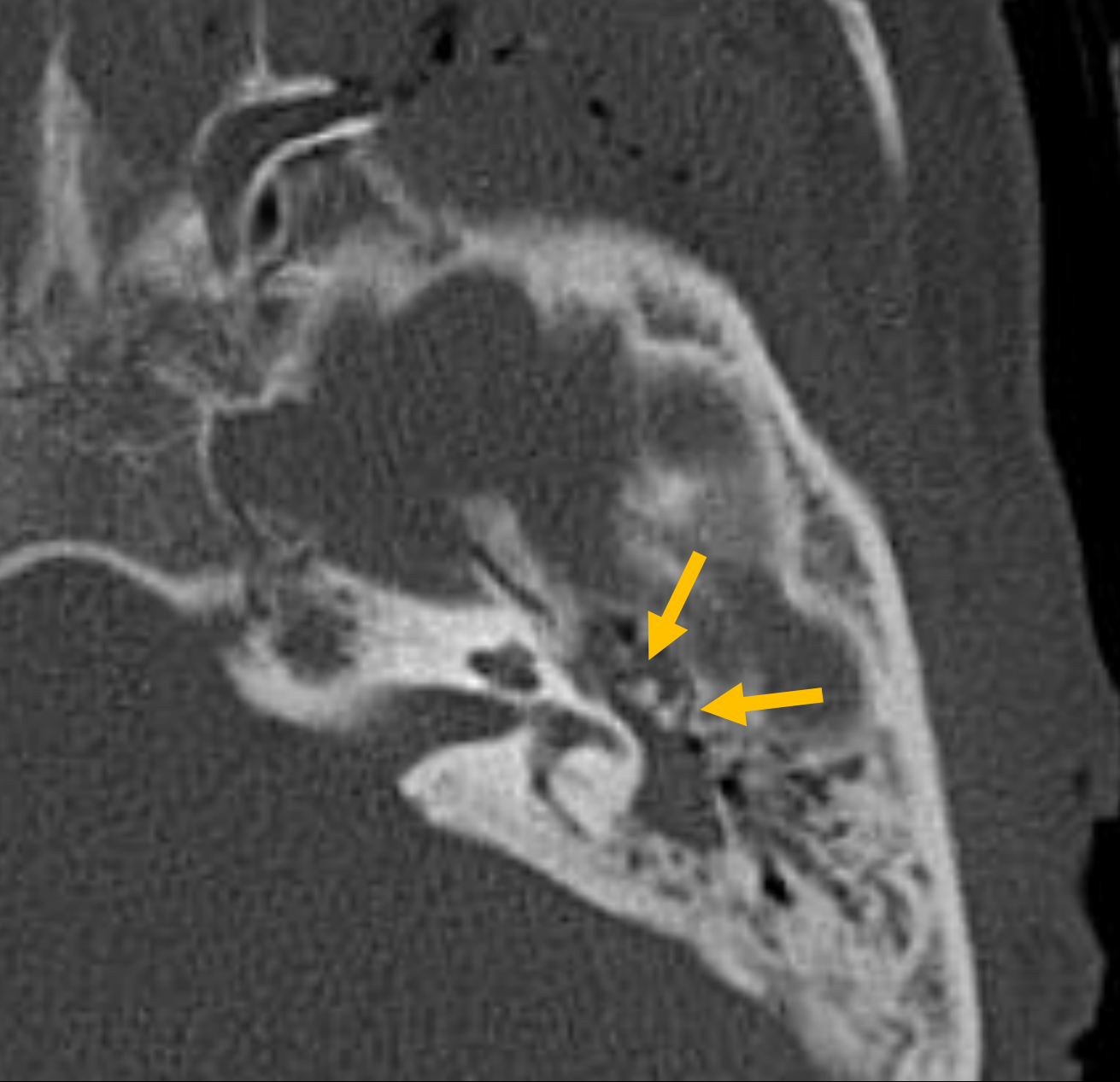


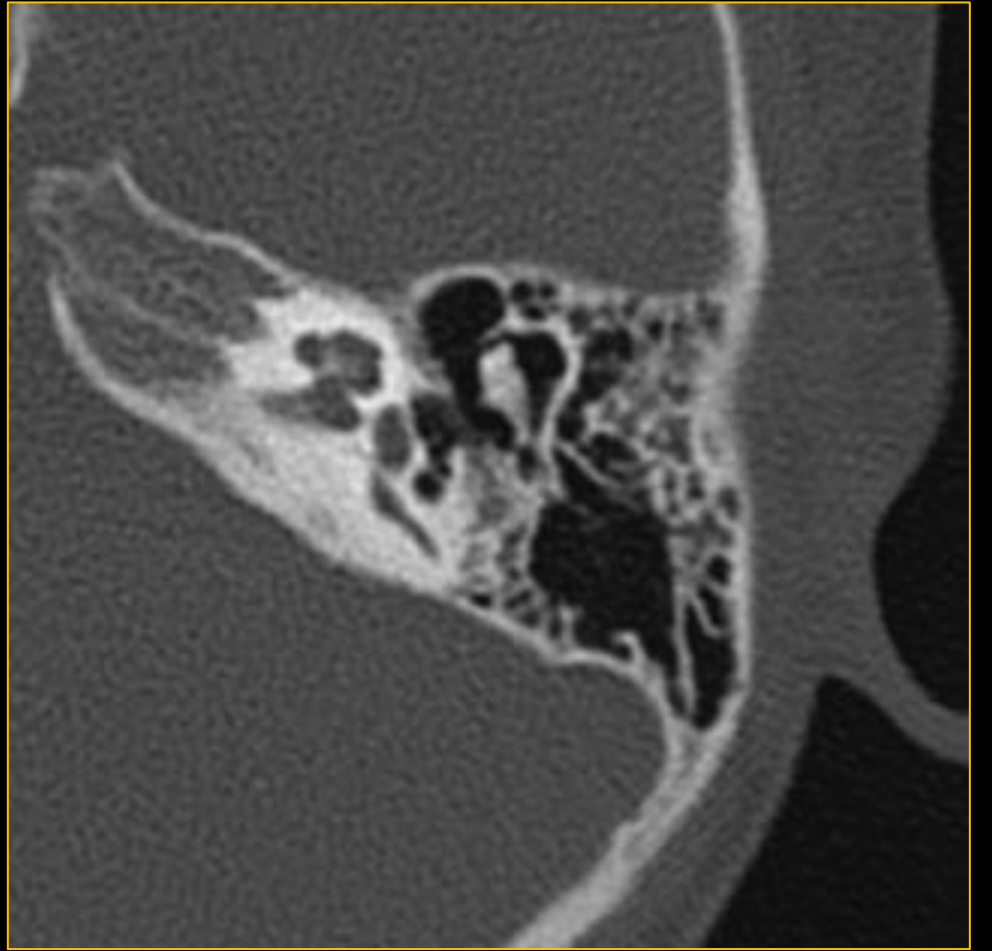
Ossicular dislocation

What's important in the trauma setting?



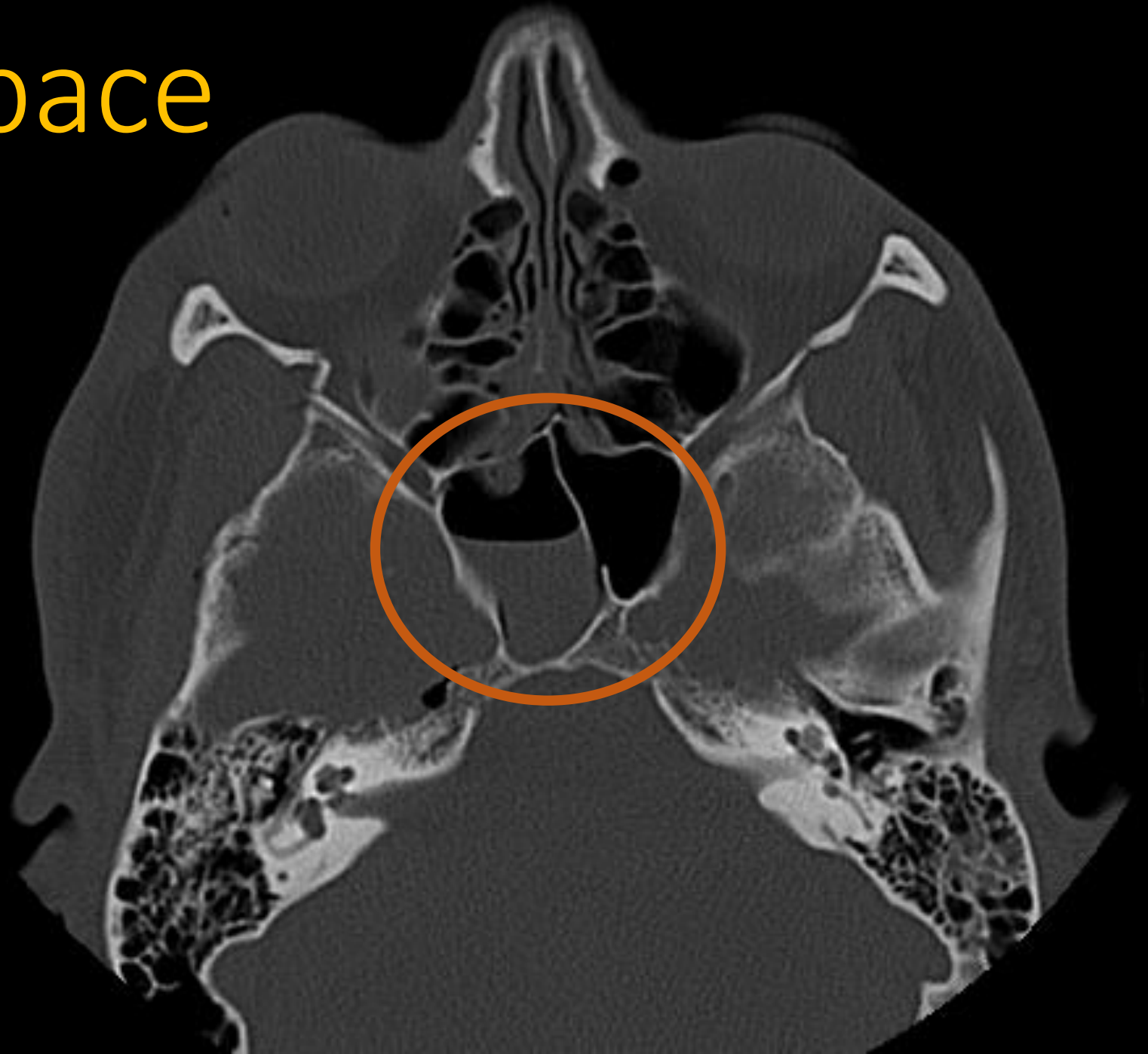


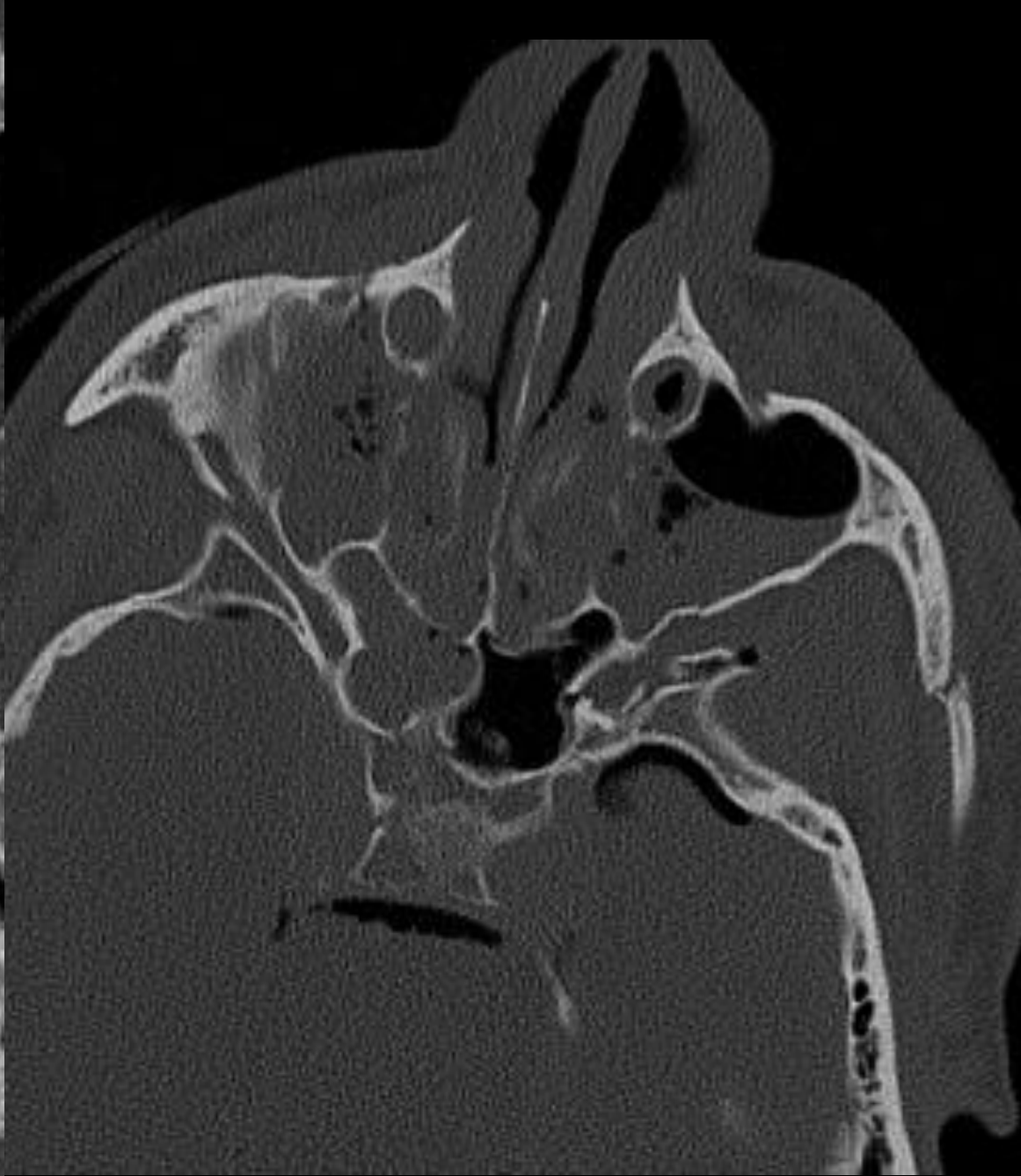


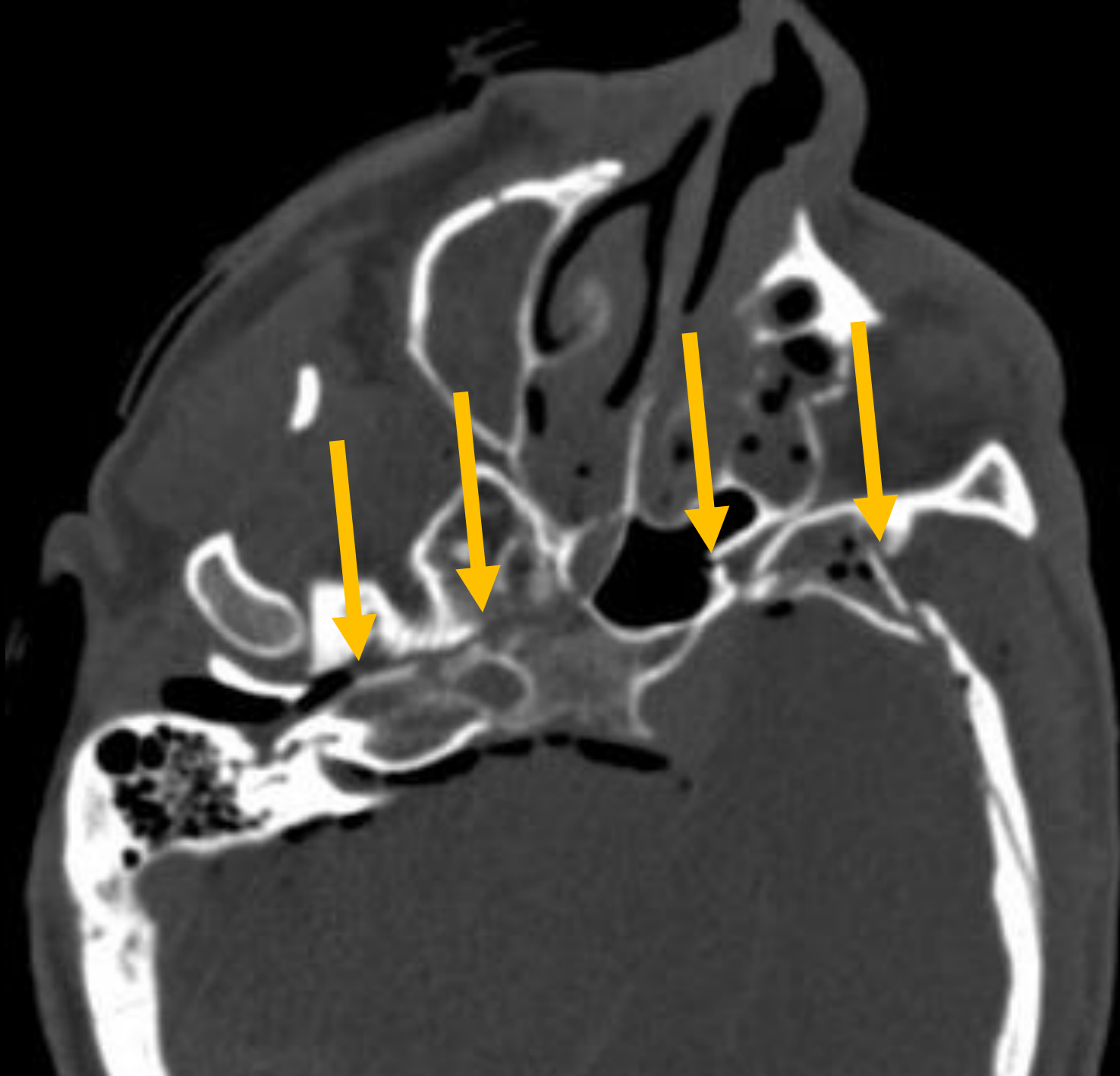


Watch this space

Watch the sphenoid sinus and **explain** ANY hemorrhage that you see there.



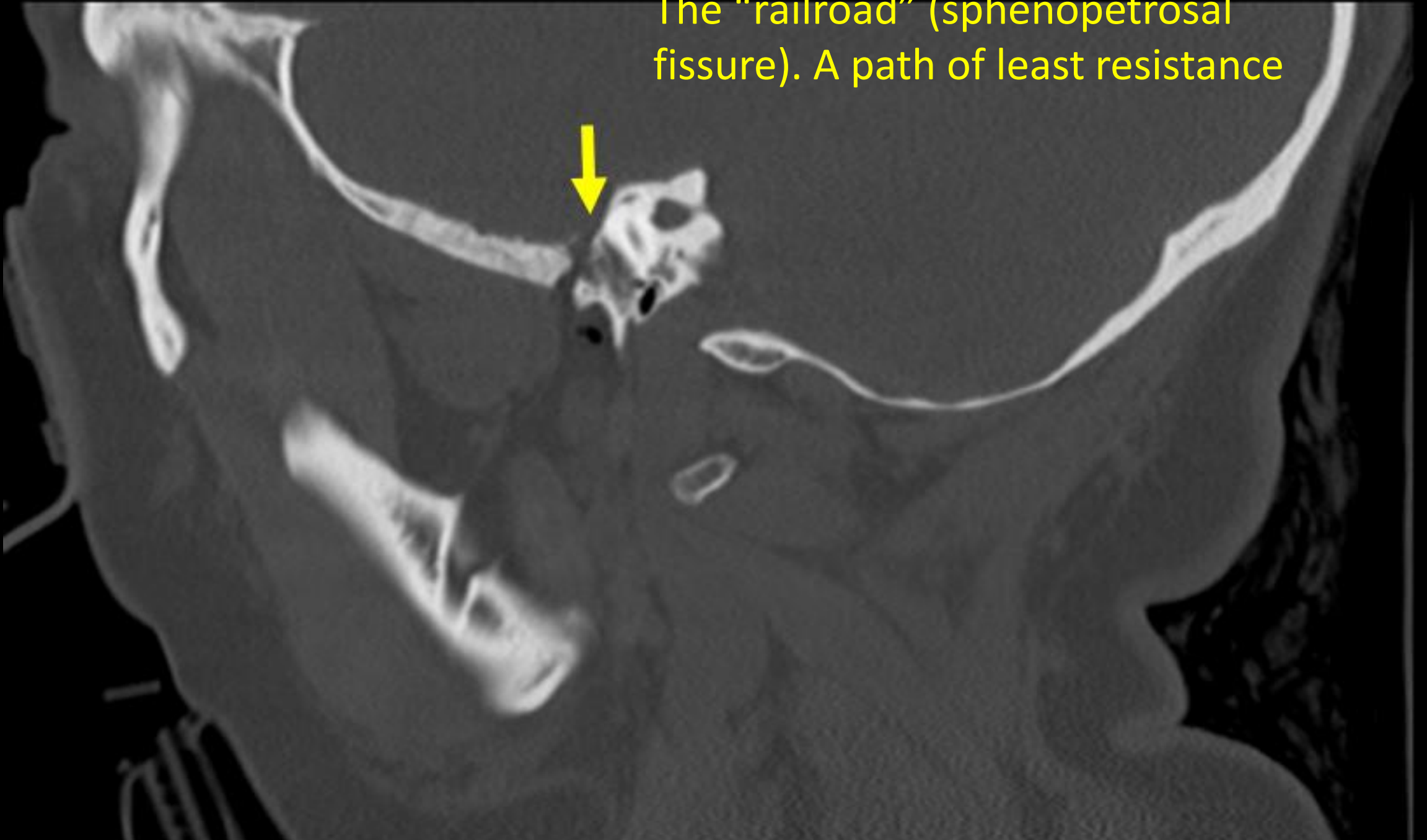




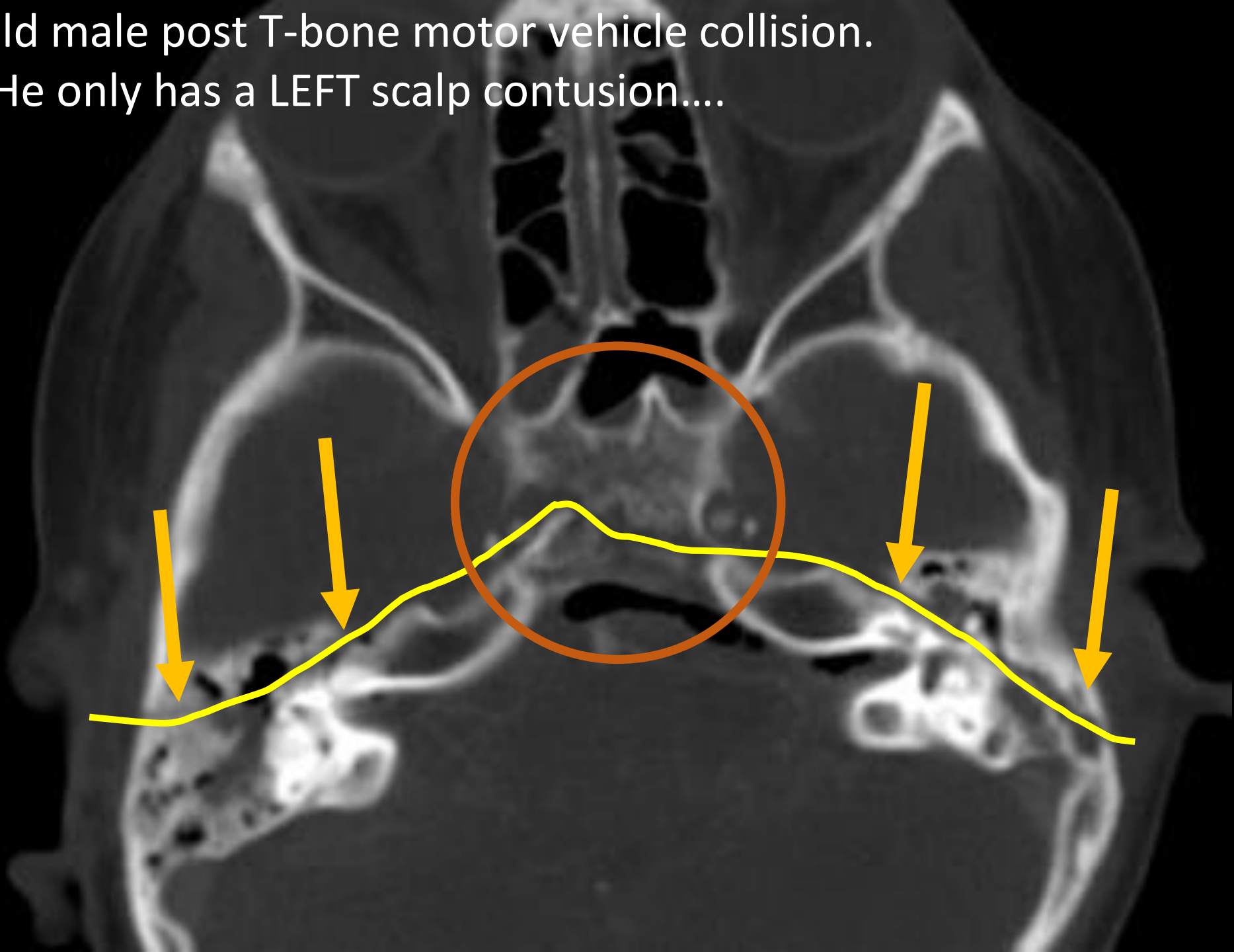
If you see a fracture on one side of the head and ANY fracture on the other side of the head...

you **have** to tell me if they are connected

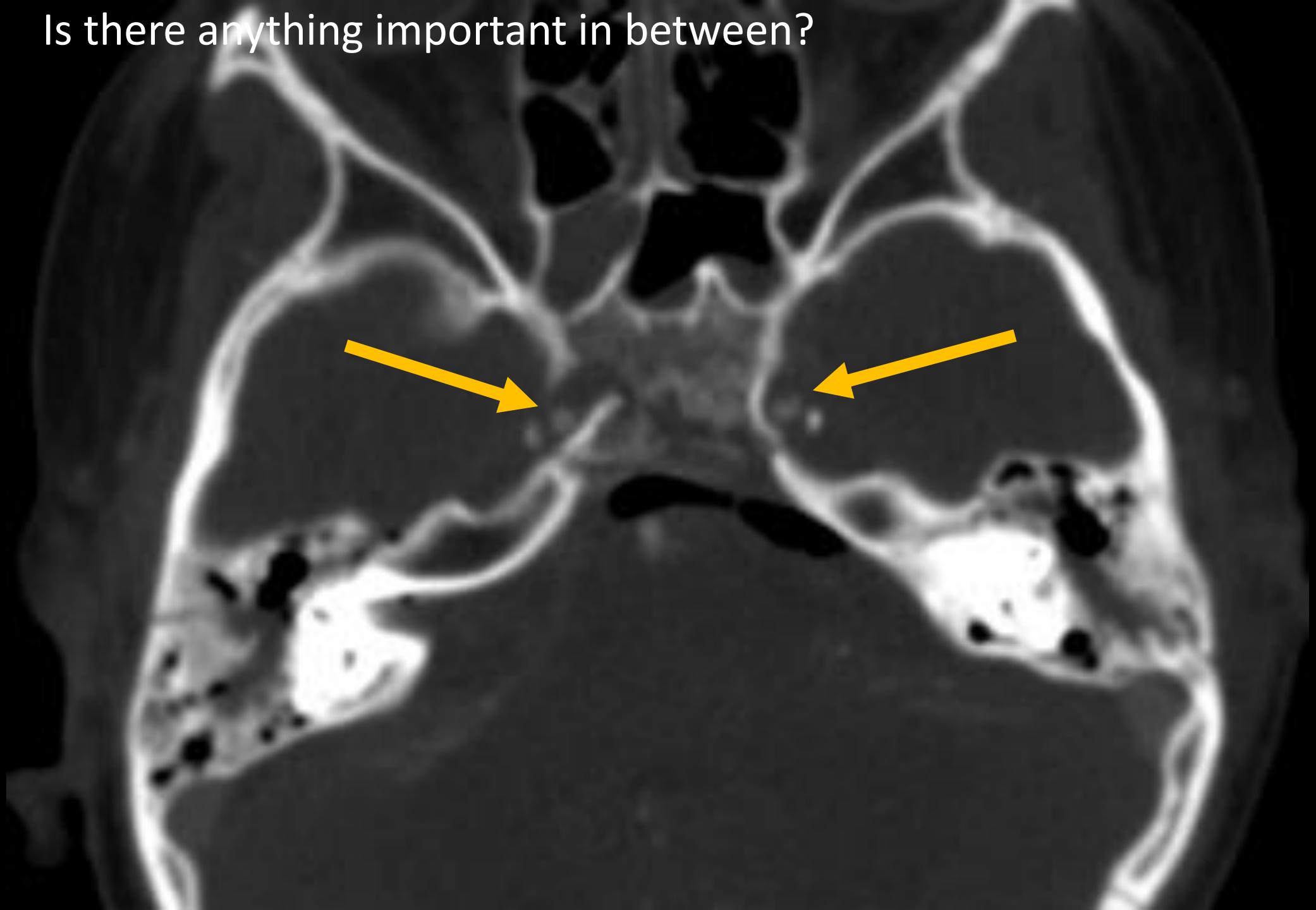
The "railroad" (sphenopetrosal fissure). A path of least resistance



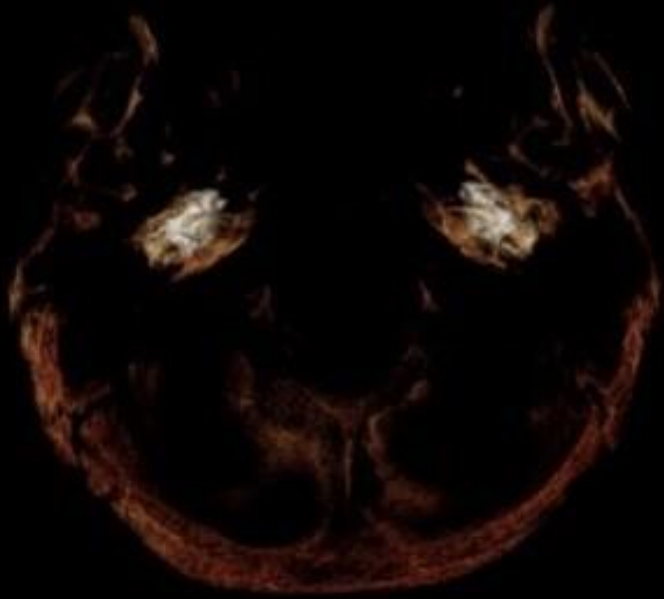
7 year old male post T-bone motor vehicle collision.
He only has a LEFT scalp contusion....



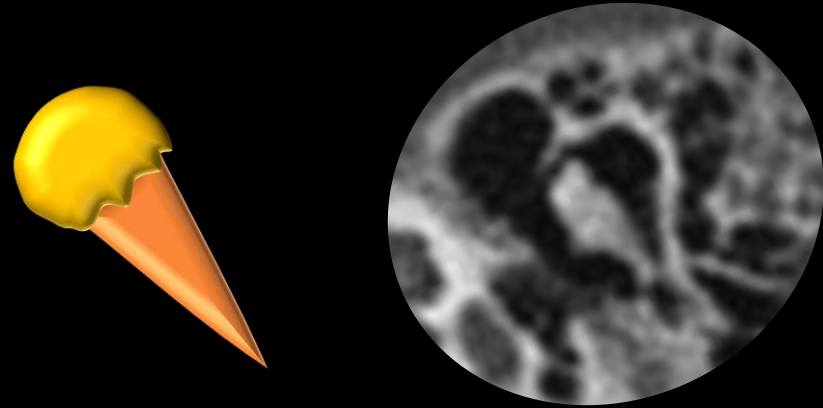
Is there anything important in between?



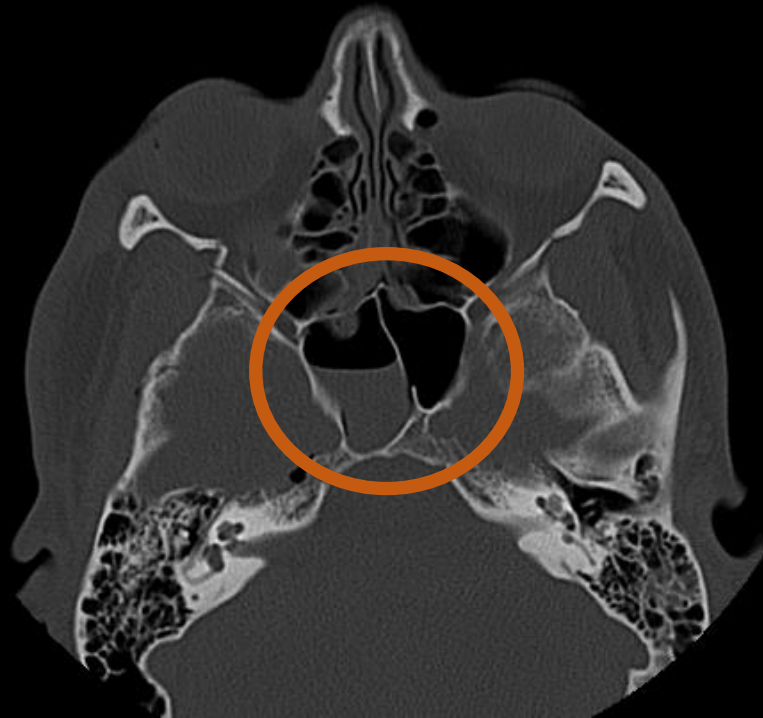
Otic capsule



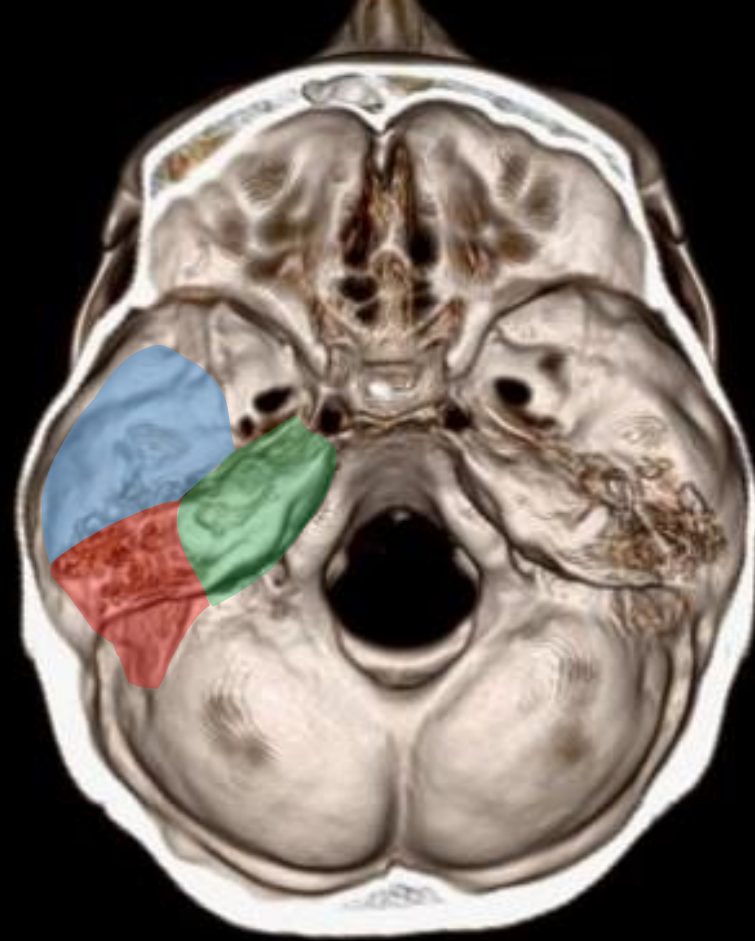
Ossicles



Watch this space



Thank you!



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Additional Reading:

- Dreizin D, et al. CT of Skull Base Fractures: Classification Systems, Complications, and Management. Radiographics 2021; 41: 762-782
- West OC, Mirvis SE, Shanmuganathan K. Transsphenoid basilar skull fracture: CT patterns. Radiology 1993; 188:329-338