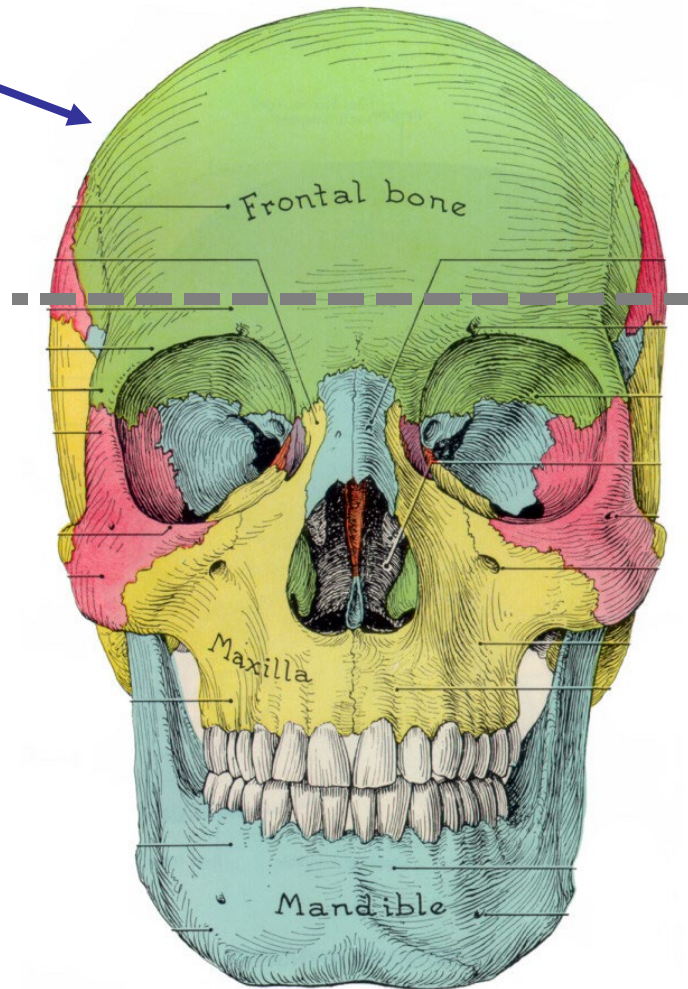


SKULL SESSION

**CALVARIUM =
SKULL CAP -**



**- bones rigidly
connected by
sutures
(connective
tissue joints to
protect brain,
attach move eyes**

BONES OF SKULL

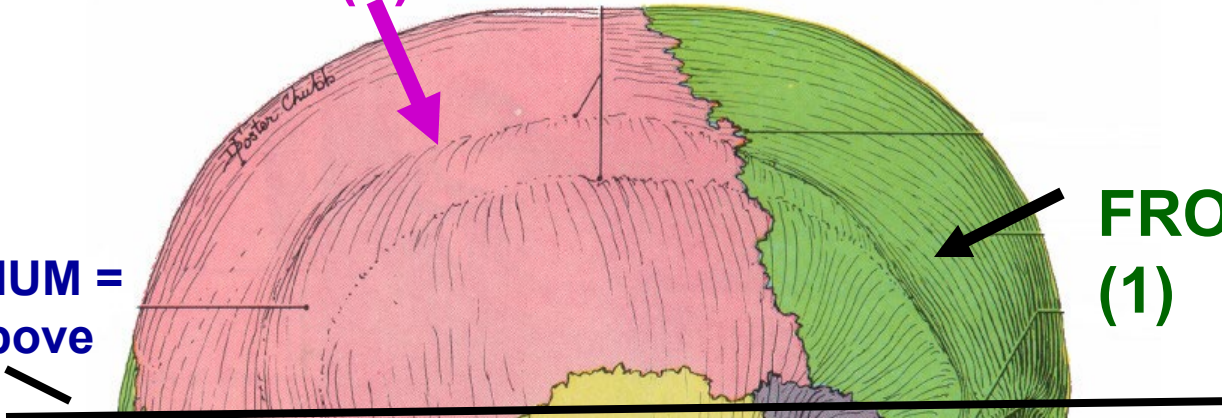
NOSE



PARIETAL (2)

FRONTAL (1)

CALVARIUM =
bones above
this line



SPHENOID (1)

SPHENOID (Gk) = wedge

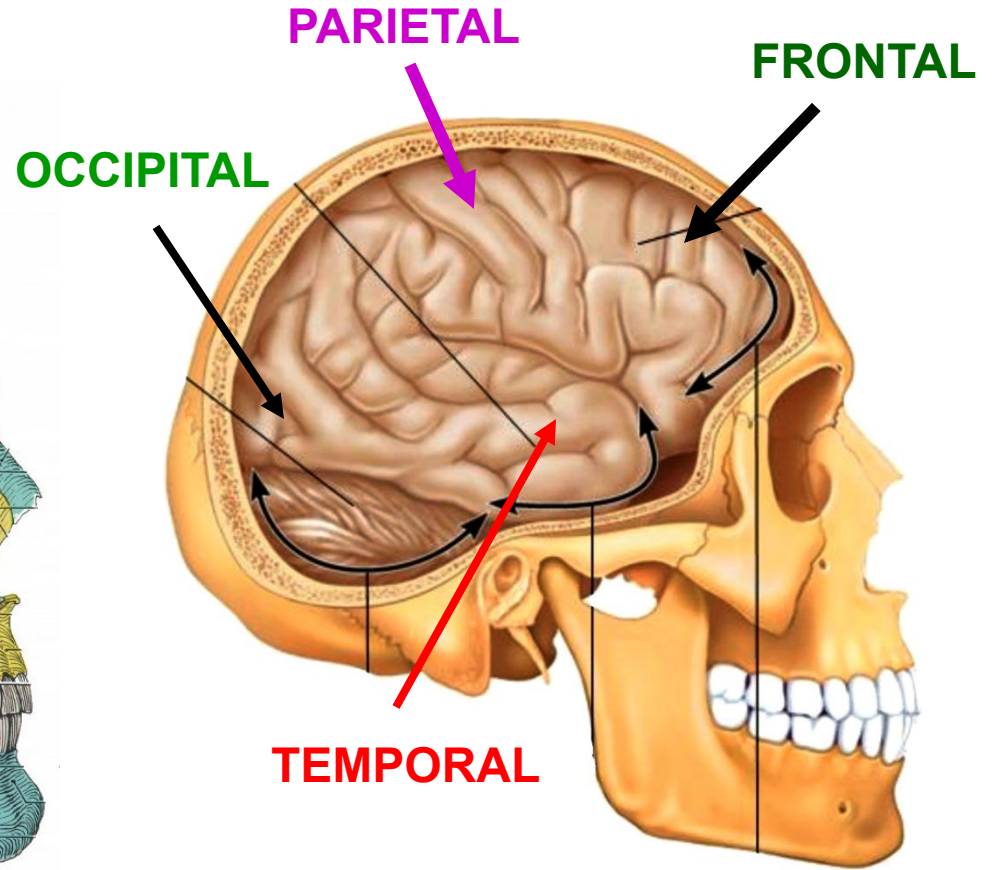
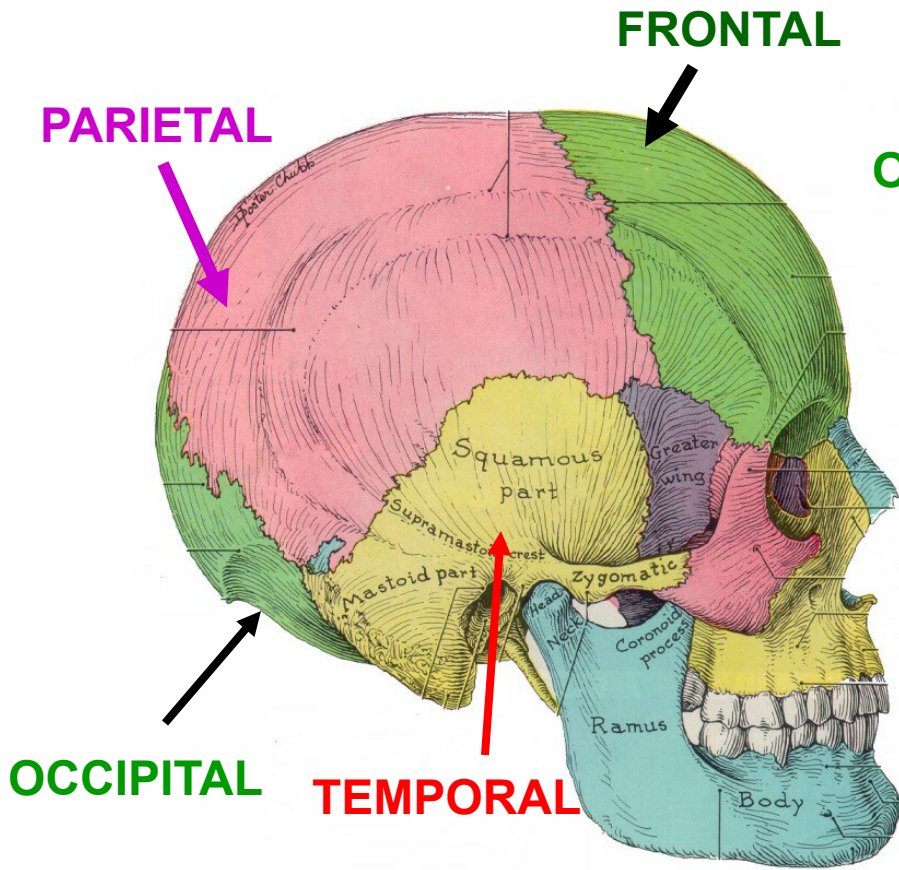
OCCIPITAL (1)

TEMPORAL (2)

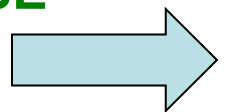
MANDIBLE (1) –
separate bone not part
of skull

LOBES OF CEREBRAL CORTEX OF BRAIN ARE NAMED FOR BONES OF SKULL

BONES OF SKULL



NOSE

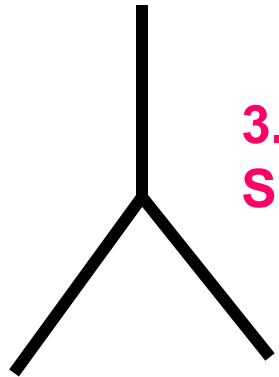


SUTURES

1. CORONAL SUTURE

2. SAGITTAL SUTURE

3. LAMBDOIDAL SUTURE



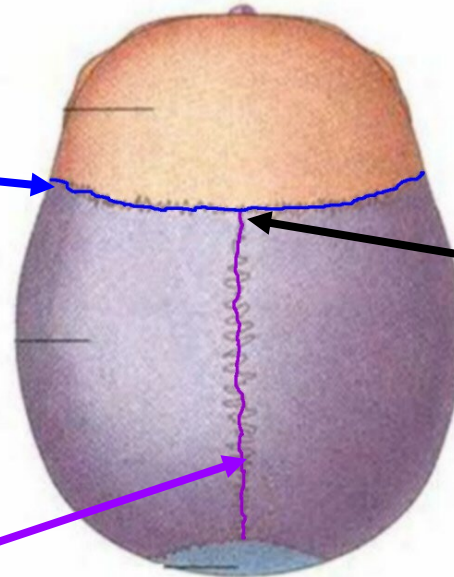
LAMBDA -
Greek letter



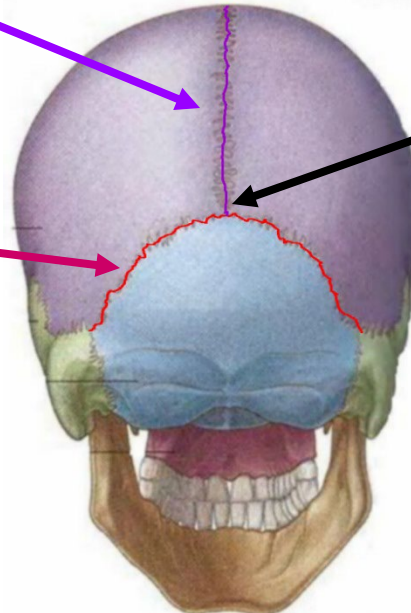
LANDMARKS

1. BREGMA – MID-POINT OF CORONAL SUTURE

2. LAMBDA – MID-POINT OF LAMBDOIDAL SUTURE



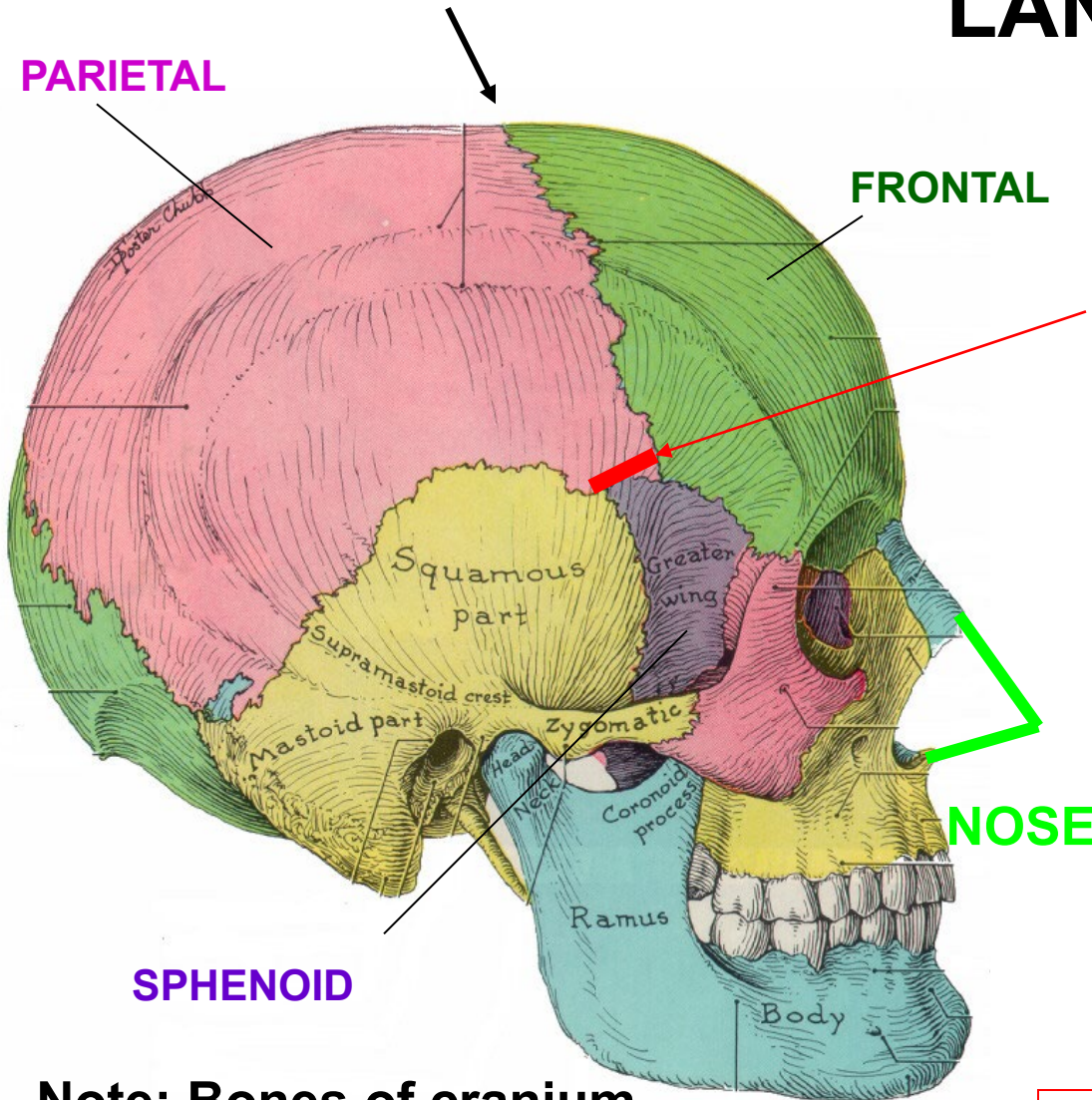
superior (top) view



posterior (back) view

CORONAL SUTURE

PARIETAL



SPHENOID

LANDMARKS

PTERION

**

- JUNCTION OF TEMPORAL SPHENOID PARIETAL AND FRONTAL BONES

PIC THANKS TO DR. ALBERICO



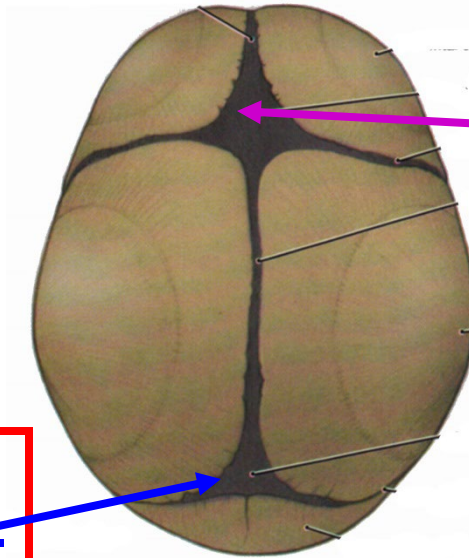
Note: Bones of cranium fuse (sutures disappear with age)

**

Note: Skull fractures in region of pterion clinically important (Epidural Hematoma)

FONTANELLES – Membranes that link bones at birth

- FONTANELLES
(' soft spots ') PERMIT
CRANIAL
COMPRESSION AT
BIRTH - CRANIAL
GROWTH



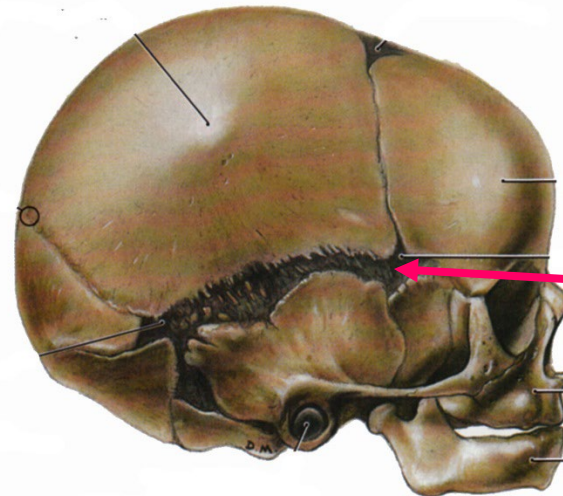
**1. ANTERIOR
FONTANELLE
AT BREGMA**



**2. POSTERIOR
FONTANELLE -
AT LAMBDA**

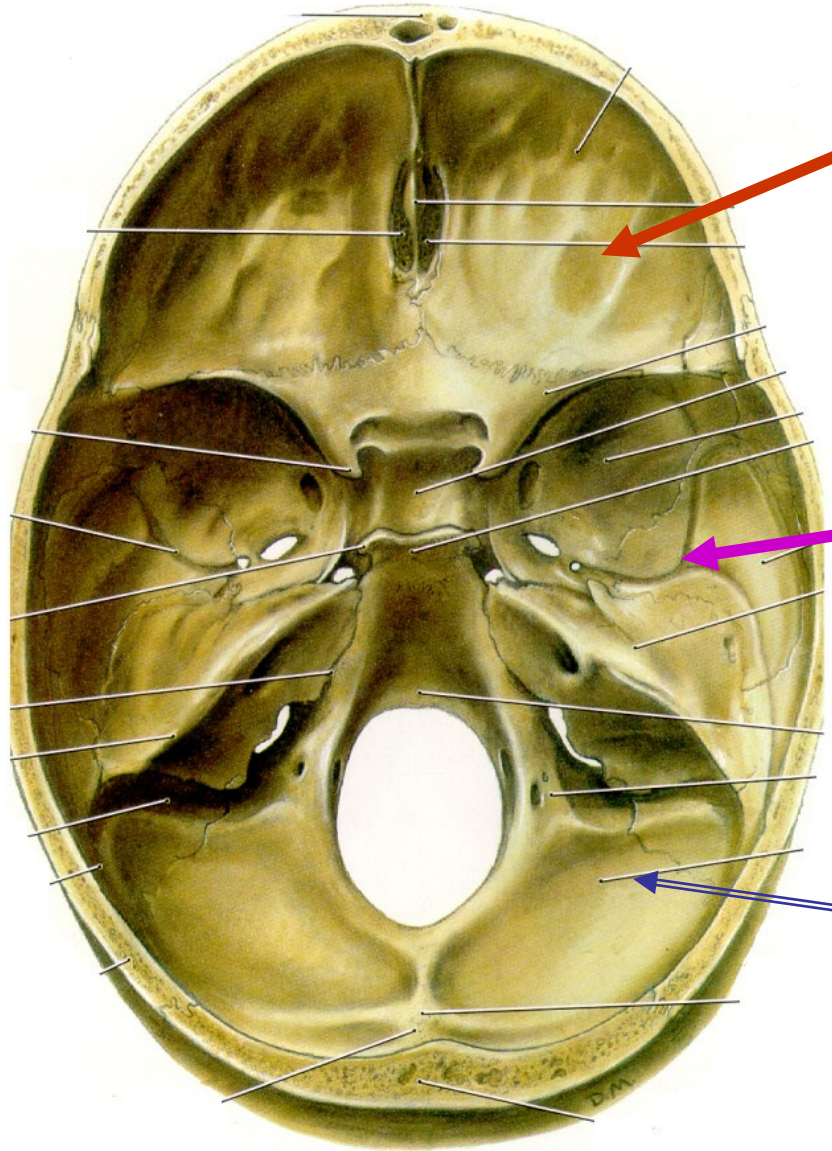


**Note: Anterior
Fontanelle can
be used to access
Superior Sagittal
venous sinus in
neonates**



**3. LATERAL
FONTANELLE
AT PTERION**

CRANIAL CAVITY- DIVIDED INTO DEPRESSIONS (FOSSAE)

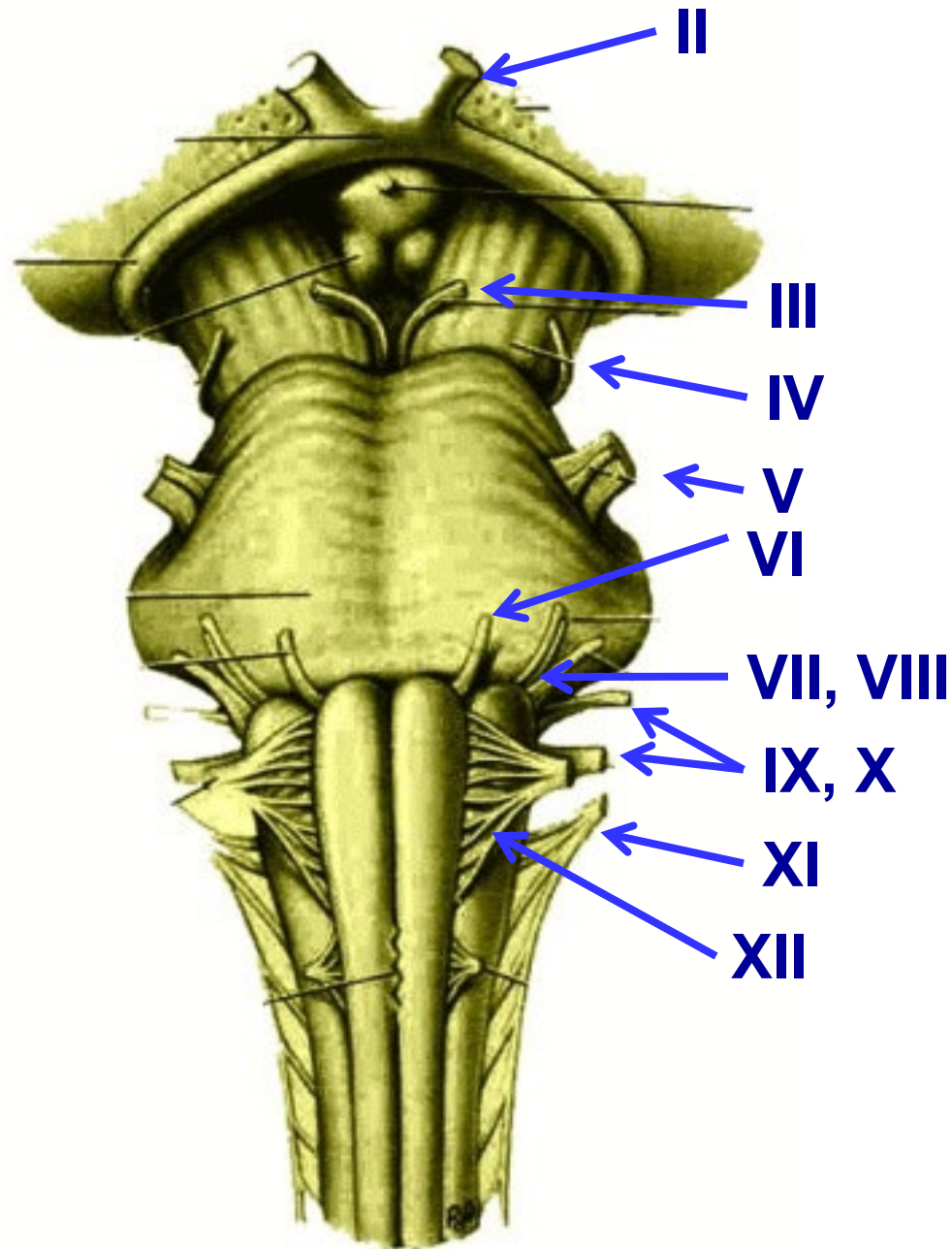


ANTERIOR CRANIAL FOSSA (ROOF OF NASAL CAVITY, ORBIT)

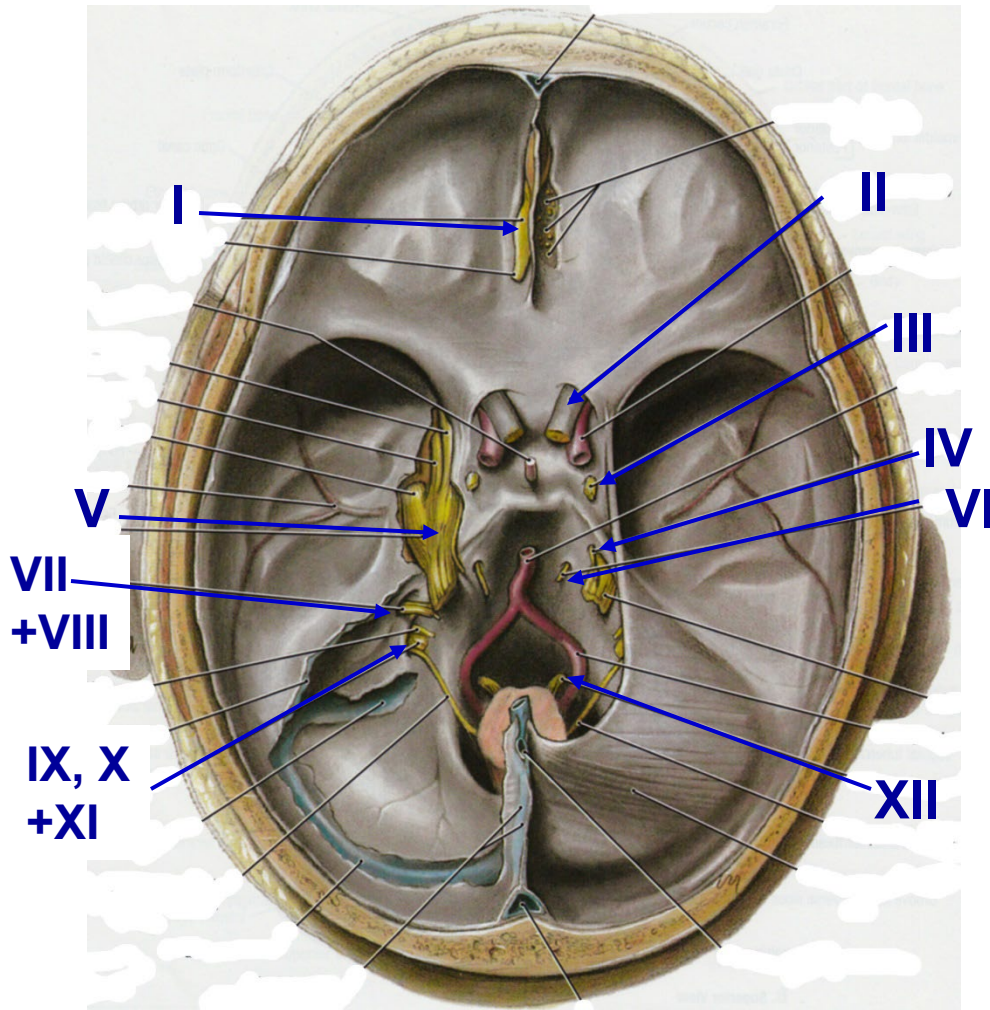
MIDDLE CRANIAL FOSSA (ORBIT, NASAL CAVITY, FACE)

POSTERIOR CRANIAL FOSSA (FACE, ORAL CAVITY, NECK)

**CRANIAL
NERVES
ARE
NUMBERED
ACCORDING
TO THEIR
POSITION
ON THE
BRAINSTEM**



CRANIAL NERVES



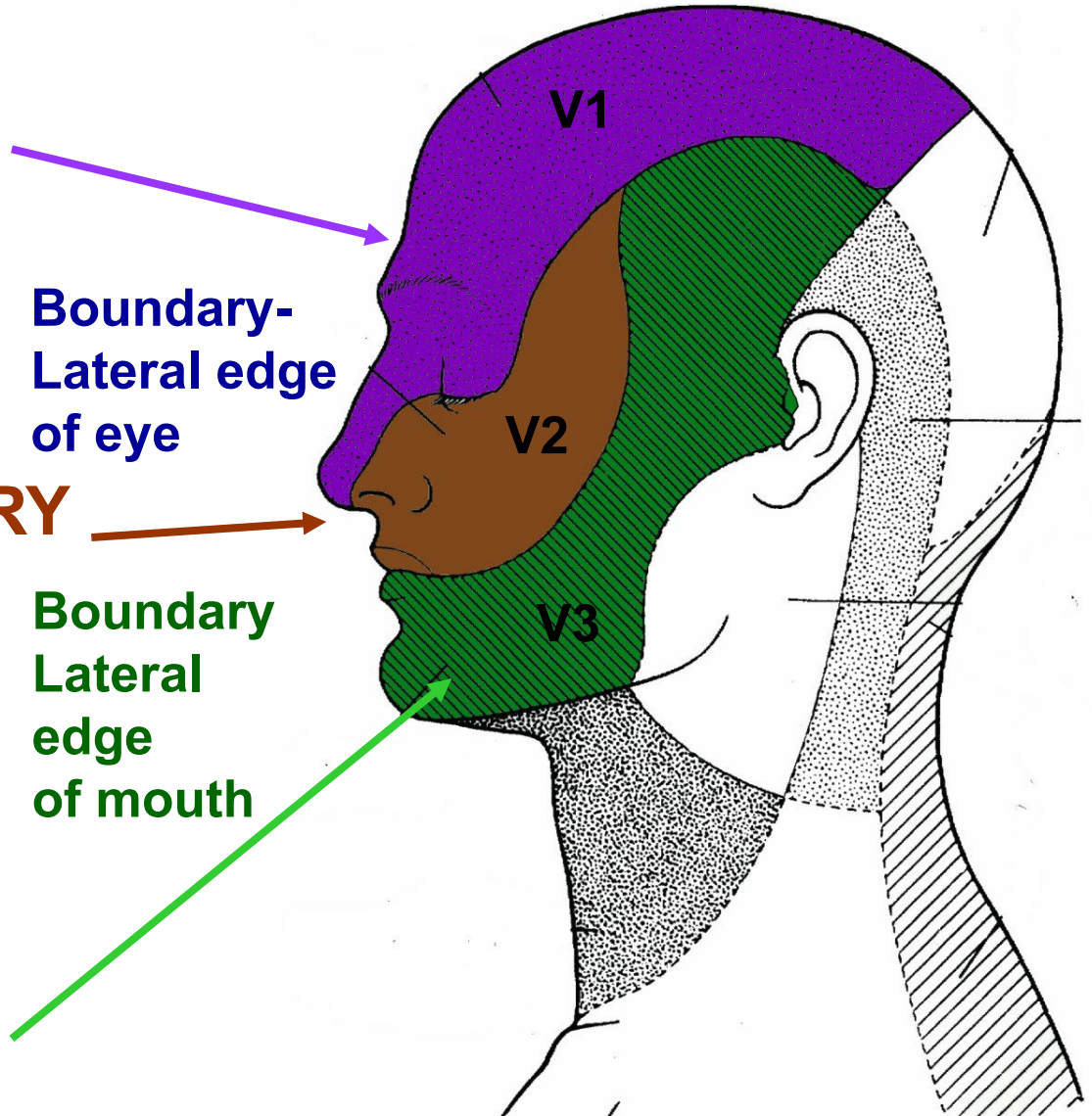
- I. OLFACTORY - sense of smell
- II. OPTIC - vision
- III. OCULOMOTOR - eye movement
- IV. TROCHLEAR - eye movement
- V. TRIGEMINAL - touch, general sensation to skin, oral cavity, nasal cavity + more
- VI. ABDUCENS - eye movement
- VII. FACIAL - muscles of facial expression + lots more
- VIII. VESTIBULO-COCHLEAR - hearing and balance
- IX. GLOSSOPHARYNGEAL - sensory to pharynx + more
- X. VAGUS - larynx, pharynx + rest of body
- XI. ACCESSORY - sternocleidomastoid, trapezius
- XII. HYPOGLOSSAL - muscles of tongue

TRIGEMINAL NERVE - 3 DIVISIONS (MAJOR BRANCHES)

**V1 –
OPHTHALMIC
DIVISION
(NERVE)**

**V2 – MAXILLARY
DIVISION
(NERVE)**

**V3 –
MANDIBULAR
DIVISION
(NERVE)**



CRANIAL NERVES

I

II

III, IV, V1, VI

V2

V3

Middle Meningeal A.

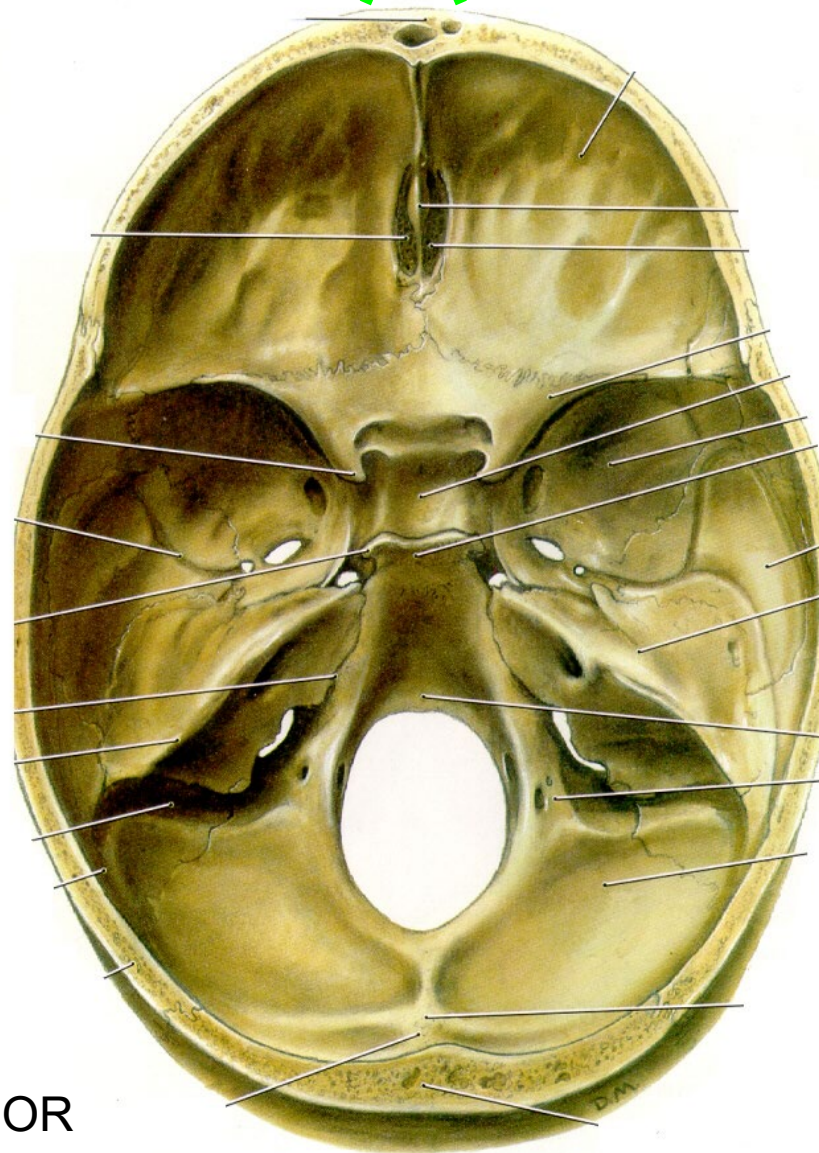
VII, VIII

IX, X, XI

XII

ANTERIOR

NOSE



POSTERIOR

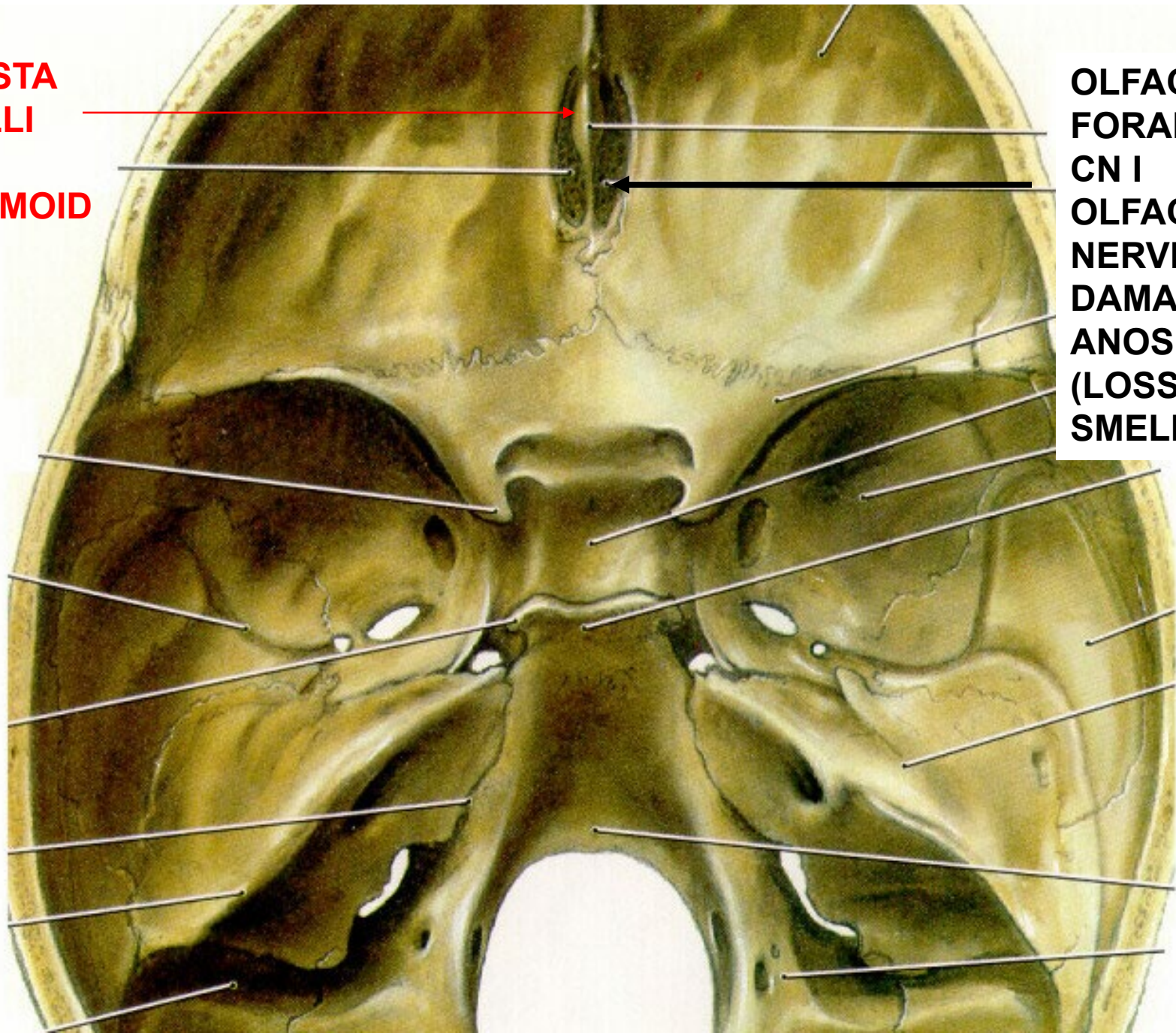
GO THROUGH CHART FROM HANDOUT – FOCUS (MAINLY) ON CRANIAL NERVES

CHART OF FORAMINA FOR SKULL SESSION 1

Foramen	Contains
Supraorbital Foramen	Supraorbital nerve V1, artery (from Ophthalmic artery), vein
Infraorbital Foramen	Infraorbital nerve V2, artery (rom Maxillary artery), vein
Mental Foramen	Mental nerve V3, artery (from Maxillary artery), vein
Parietal Emissary Foramina	Emissary veins (connect scalp to diploe, venous sinuses in cranial cavity)
Olfactory Foramina	Olfactory nerves (I)
Optic Foramen (canal)	Optic nerve (II), Ophthalmic artery (from Internal Carotid artery)
Superior Orbital Fissure	III, IV, V1 (Ophthalmic division of Trigeminal nerve), VI; Ophthalmic veins
Foramen Rotundum	Maxillary division of Trigeminal nerve (V2).
Foramen Ovale	Mandibular division of V (V3) and Accessory Meningeal artery (when present)
Foramen Spinosum	Middle Meningeal artery and Nervus Spinosus
Carotid canal	Internal carotid artery and Sympathetic plexus surrounding artery
Internal Auditory Meatus	Facial nerve (VII) and Vestibulocochlear nerve (VIII)
Stylomastoid foramen	Facial nerve (VII)
Jugular foramen	Glossopharyngeal (IX), Vagus (X) and Accessory (XI) nerves.
Hypoglossal canal	Hypoglossal nerve (XII)
Foramen Magnum	Spinal cord and Vertebral arteries and veins
Inferior Orbital Fissure	Infraorbital Nerve V2, artery, vein
Anterior and Posterior Ethmoidal Foramina	Anterior and Posterior Ethmoidal nerves (V1), artery, vein
Nasolacrimal Duct	Membranous lacrimal duct (to Inferior Meatus of Nasal Cavity)

**CRISTA
GALLI
OF
ETHMOID**

**OLFACTORY
FORAMEN -
CN I
OLFACTORY
NERVE
DAMAGE -
ANOSMIA
(LOSS OF
SMELL)**

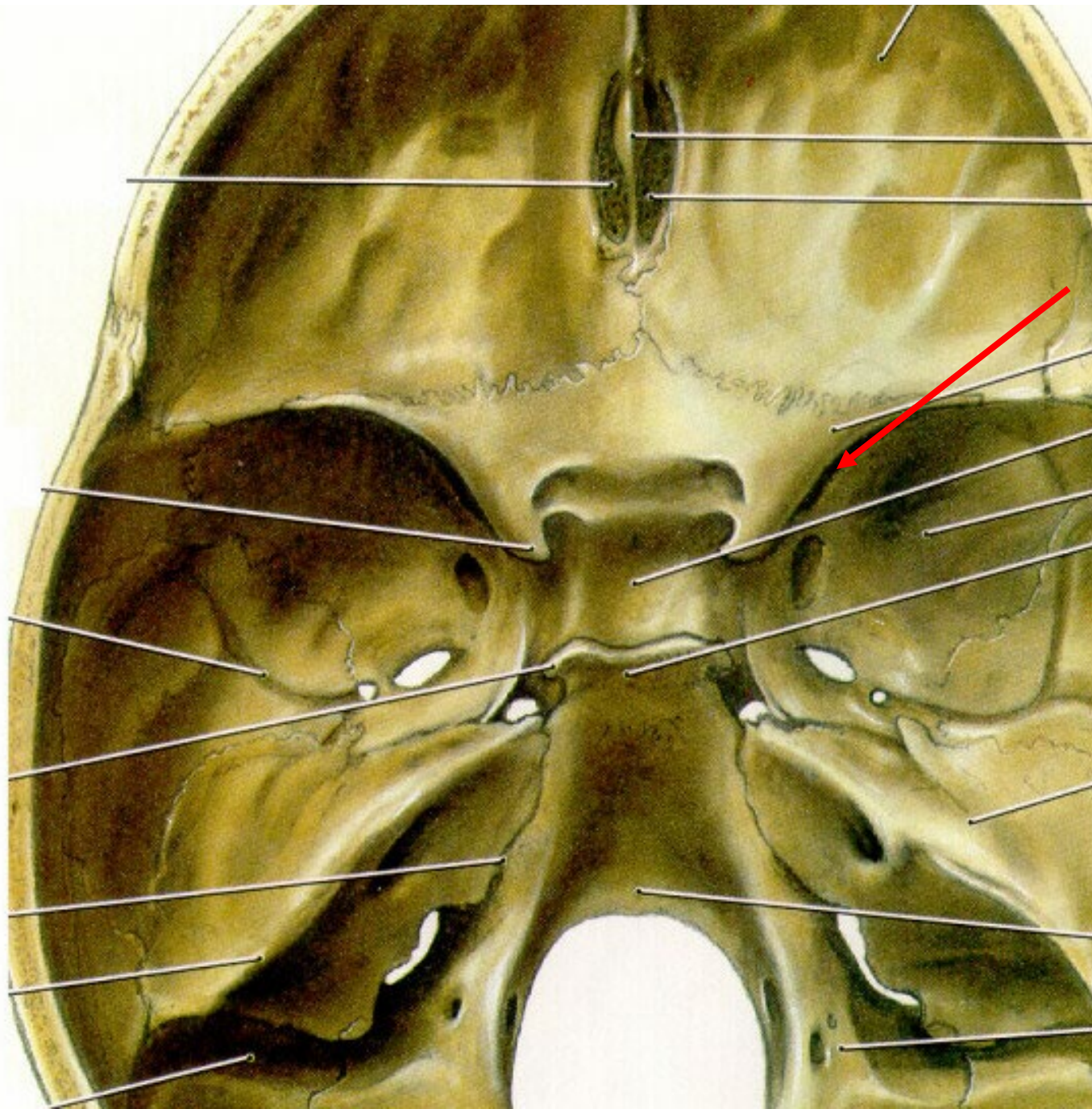


OPTIC FORAMEN
CN II
OPTIC NERVE,
OPHTHALMIC ARTERY

This anatomical illustration shows the internal base of the skull. The optic foramen is visible at the top center, where the optic chiasm is located. The optic nerves and ophthalmic arteries are shown exiting the foramen. A red asterisk is placed to the right of the chiasm, and a black arrow points to the chiasm from the text box below.



DAMAGE
CN II
OPTIC NERVE – BLIND
IN ONE EYE

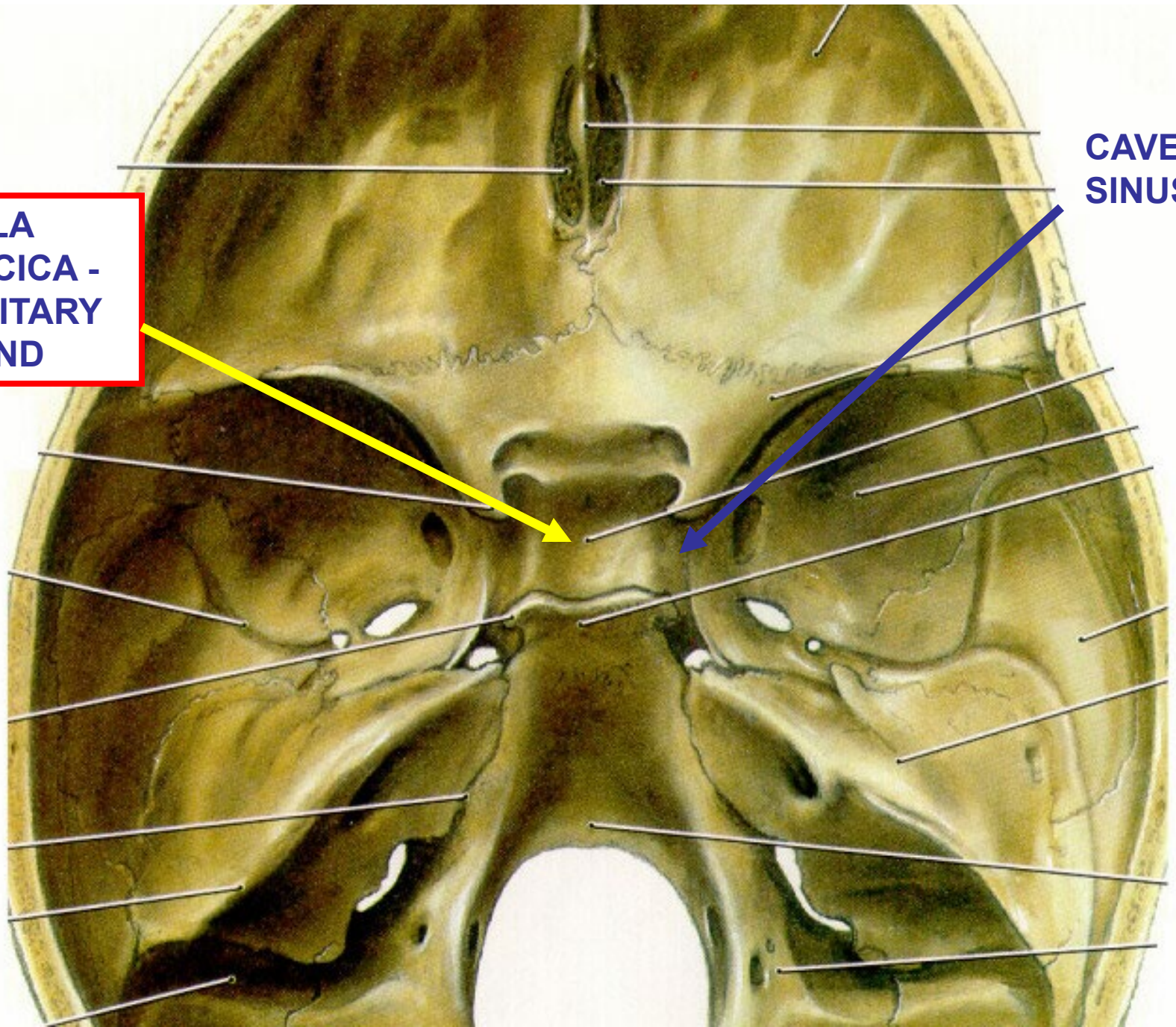


**SUPERIOR
ORBITAL
FISSURE –
CN III, IV
V1, VI +
OPHTHALMIC
VEINS**

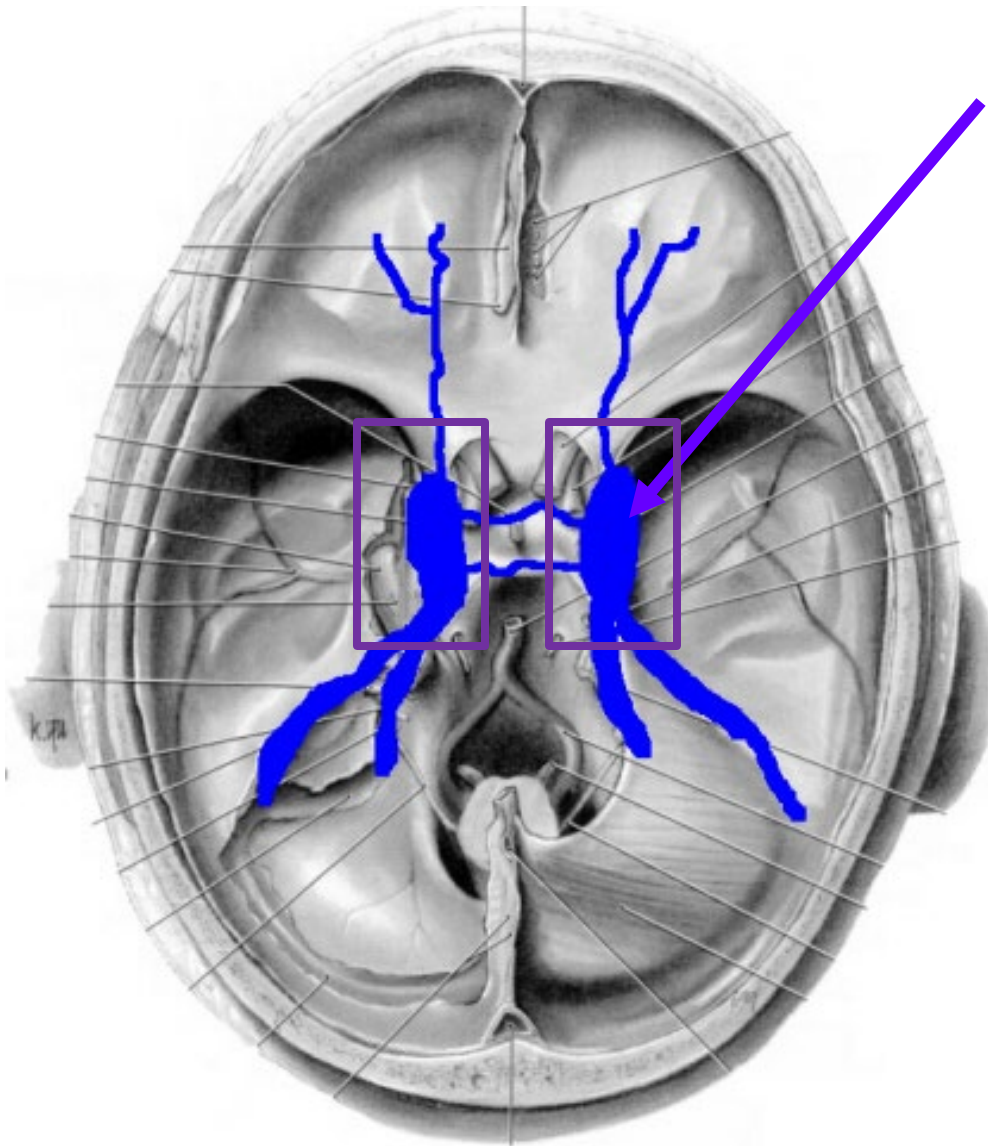
**TUMOR AT
SUPERIOR
ORBITAL
FISSURE –
CN III, IV, VI -
AFFECT EYE
MOVEMENTS
V1 – LOSS,
DECREASE
SENSATION TO
SKIN OF
FOREHEAD**

**SELLA
TURCICA -
PITUITARY
GLAND**

**CAVERNOUS
SINUS**



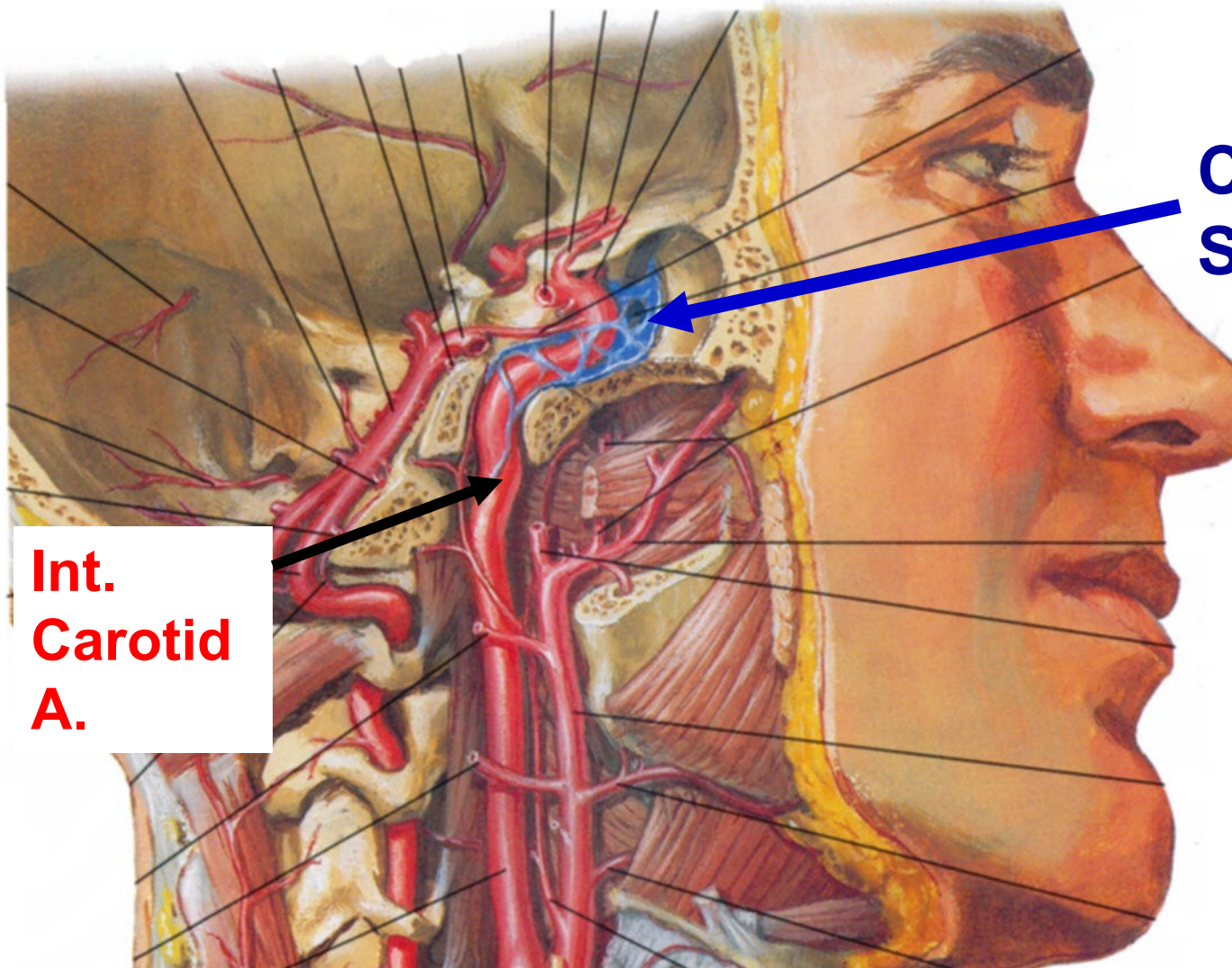
VENOUS SINUSES



Cavernous sinuses - in middle cranial fossa; receive blood from Sup. and Inf. Ophthalmic veins, Cerebral veins; many structures pass in wall of Cavernous sinus (Cranial nerves III, IV, V1, V2, VI; also Internal Carotid Artery)

INFECTION IN CAVERNOUS SINUS - SYMPTOM 'BLURRED VISION'

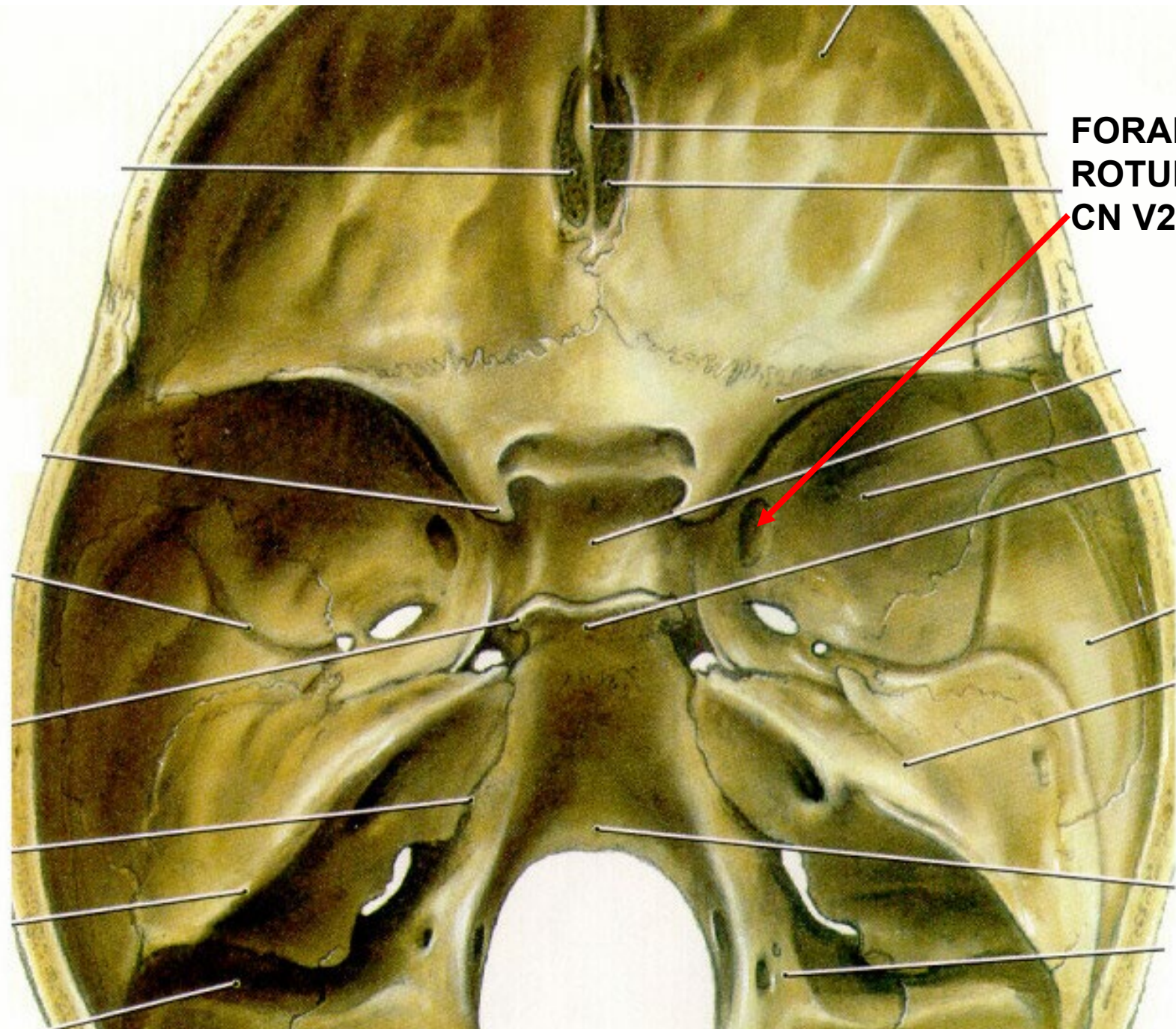
Internal Carotid Artery – Passes Through Wall of Cavernous Sinus **



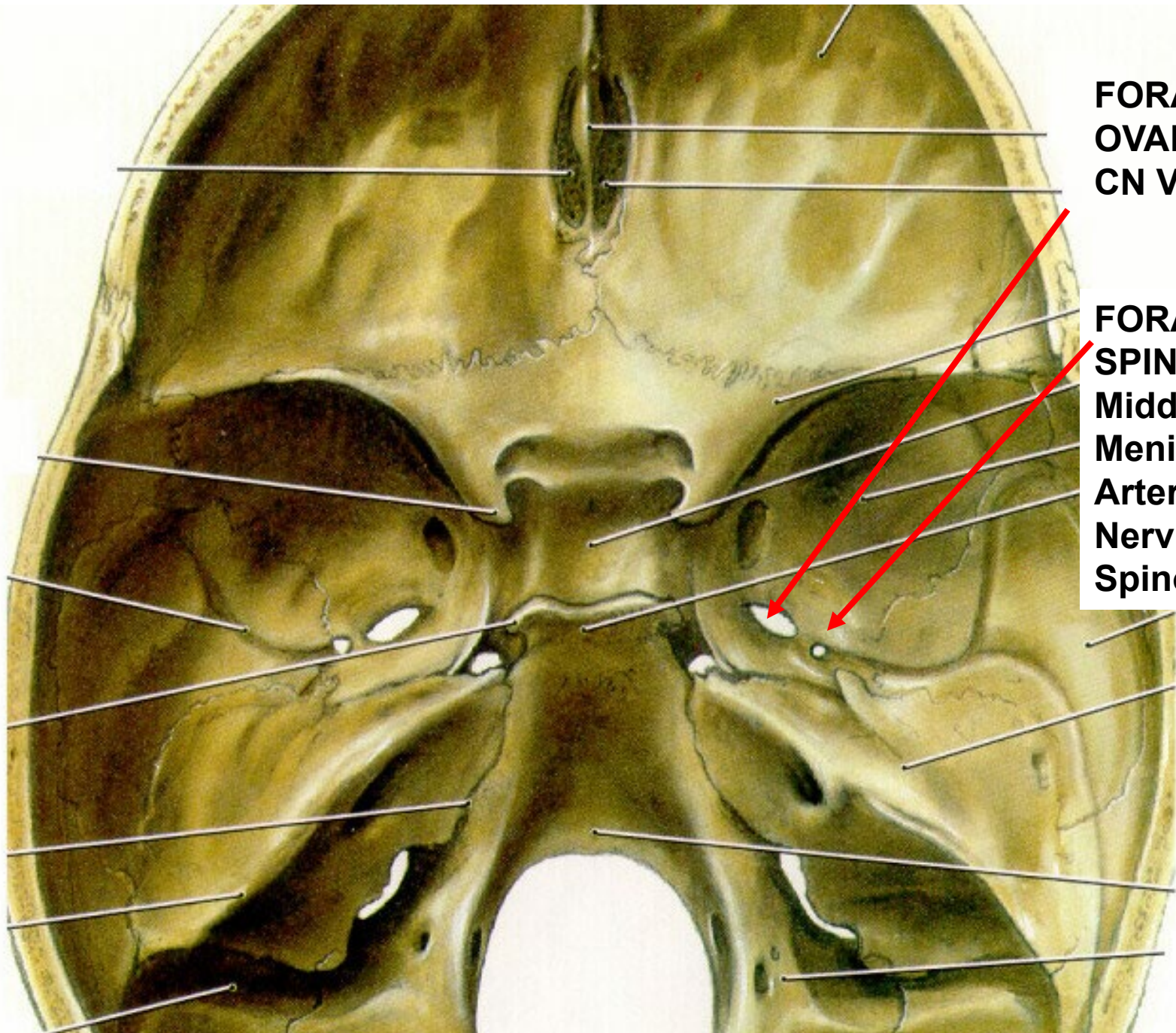
Cavernous Sinus **

Int. Carotid A.

Carotid-Cavernous Fistula - Bleed of Internal Carotid Artery inside Cavernous Sinus

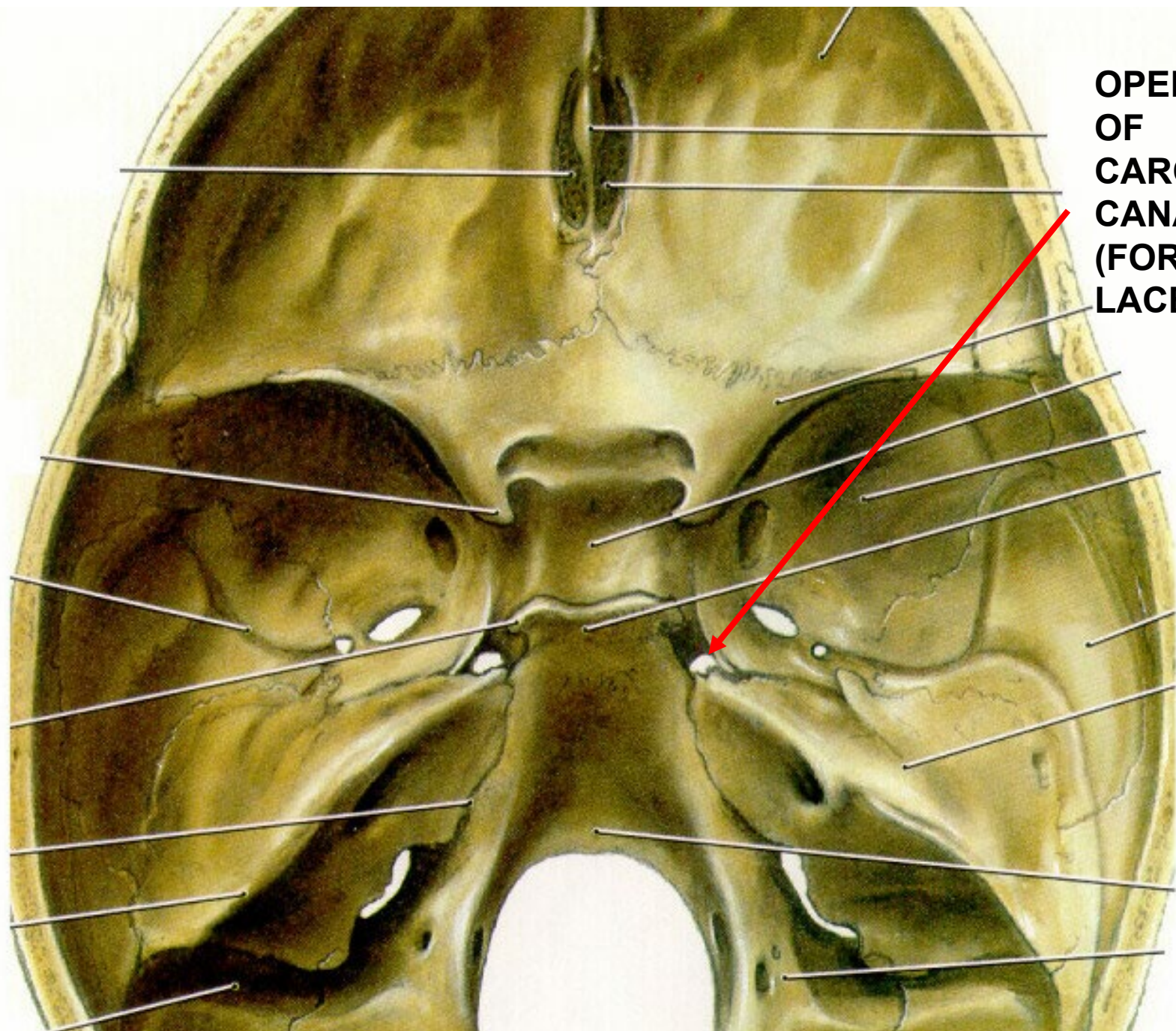


**FORAMEN
ROTUNDUM -
CN V2**

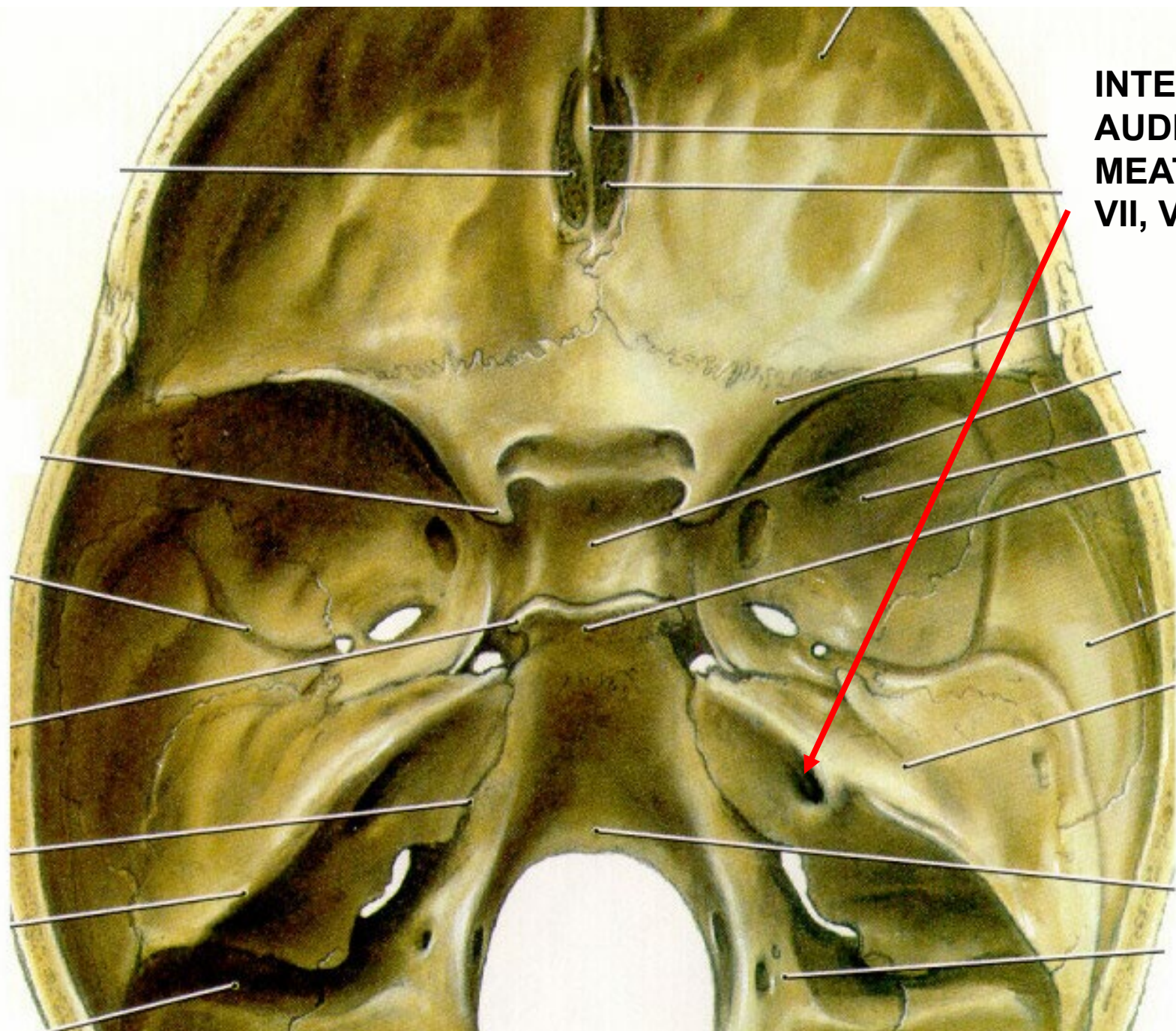


**FORAMEN
OVALE –
CN V3**

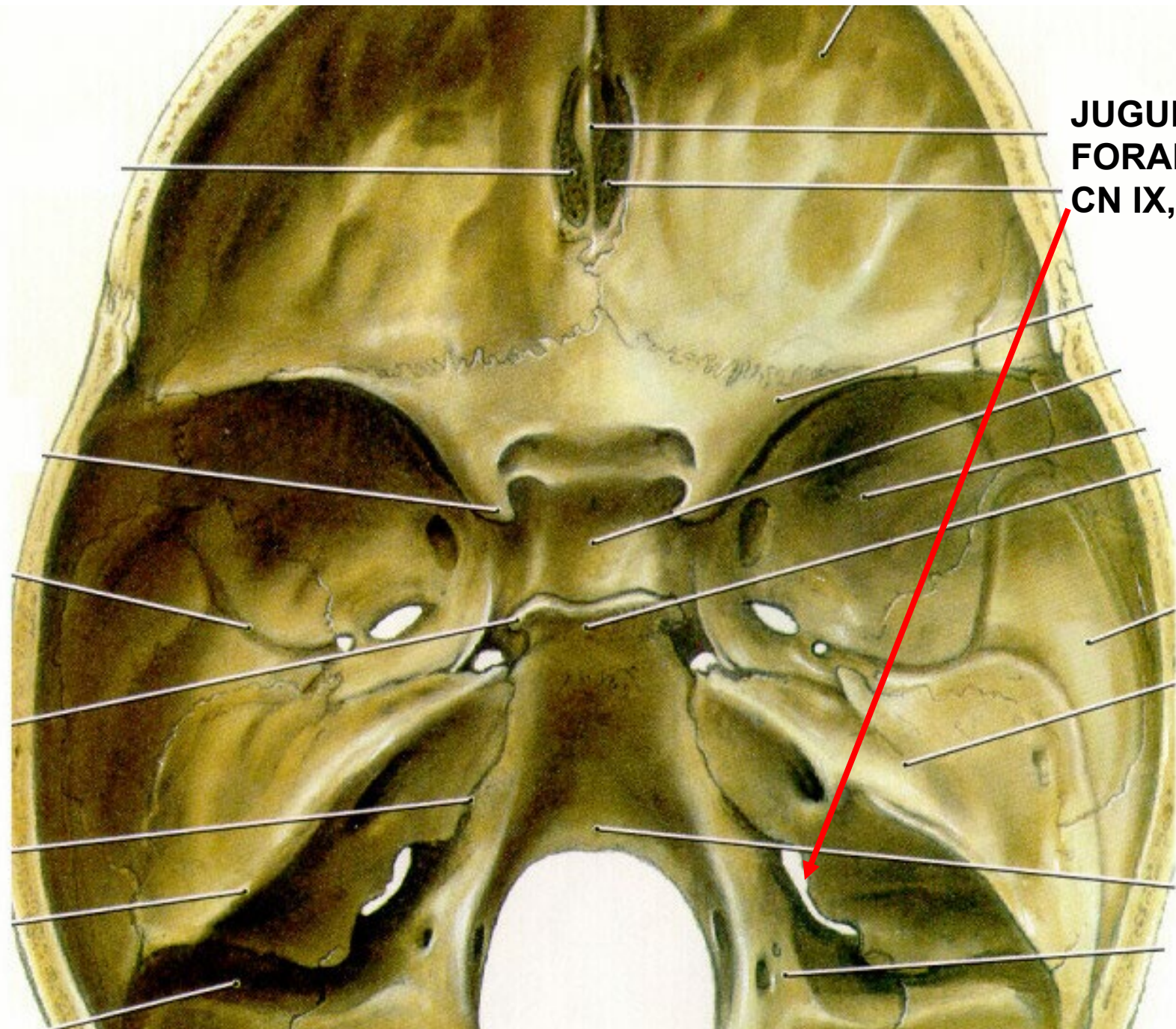
**FORAMEN
SPINOSUM -
Middle
Meningeal
Artery,
Nervus
Spinosus**



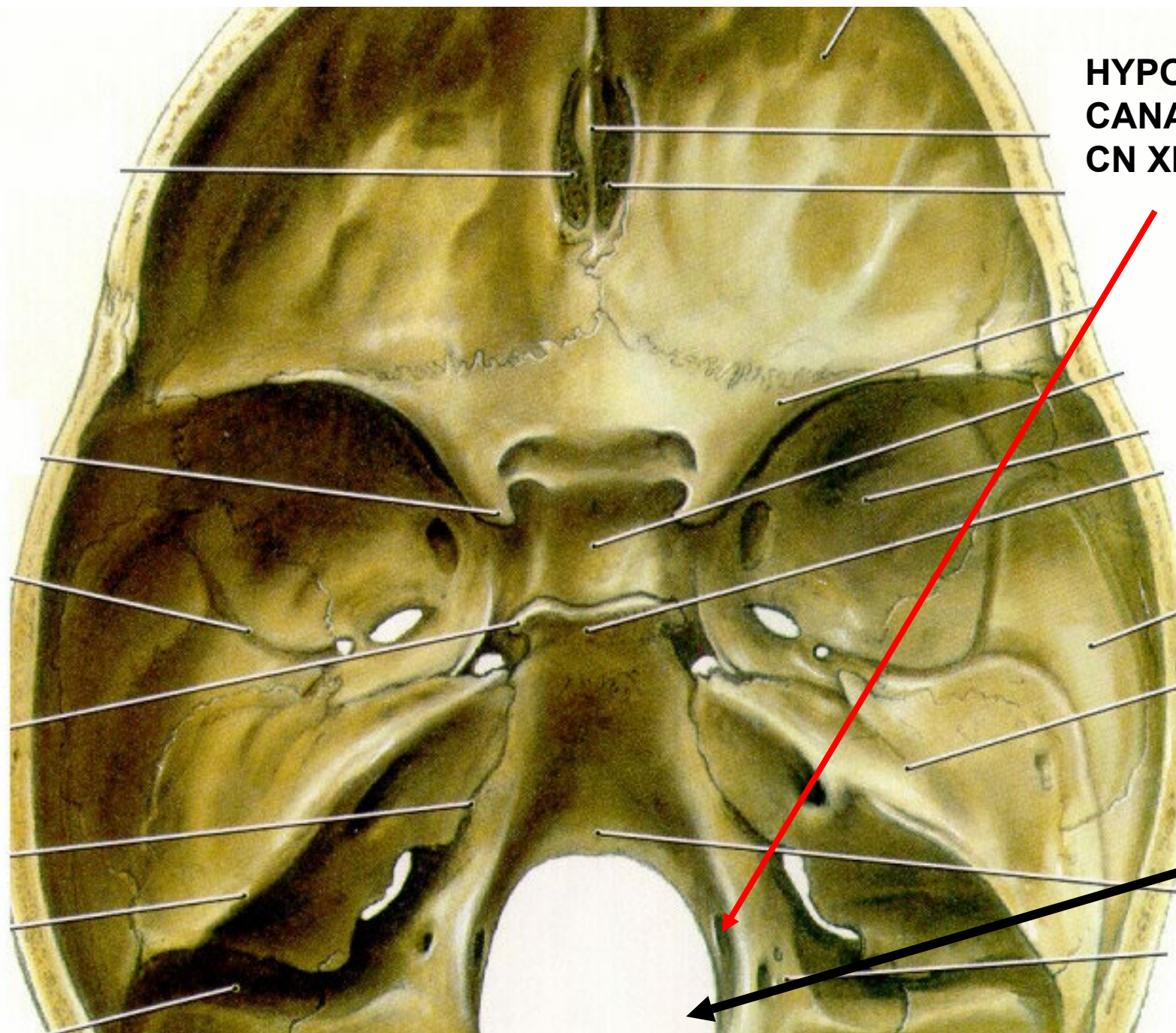
**OPENING
OF
CAROTID
CANAL
(FORAMEN
LACERUM)**



**INTERNAL
AUDITORY
MEATUS –
VII, VIII**



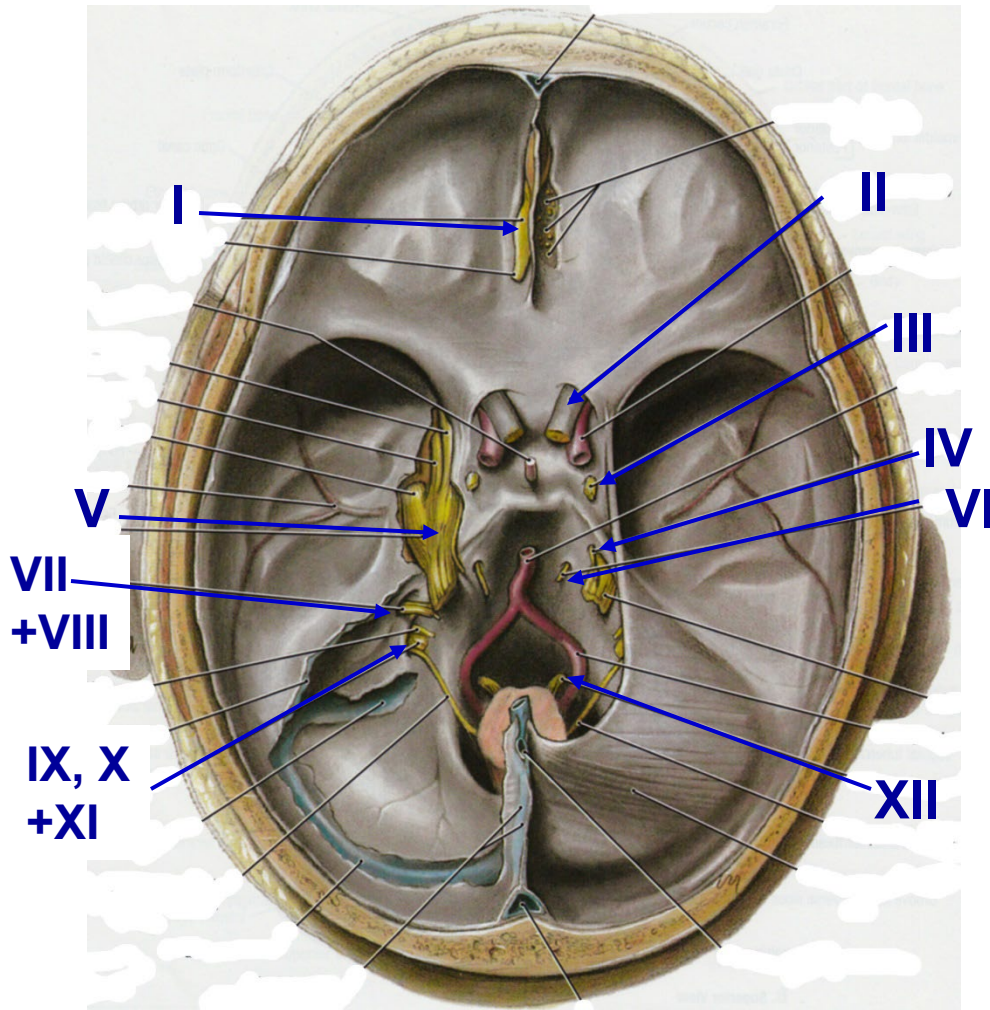
**JUGULAR
FORAMEN –
CN IX, X, XI**



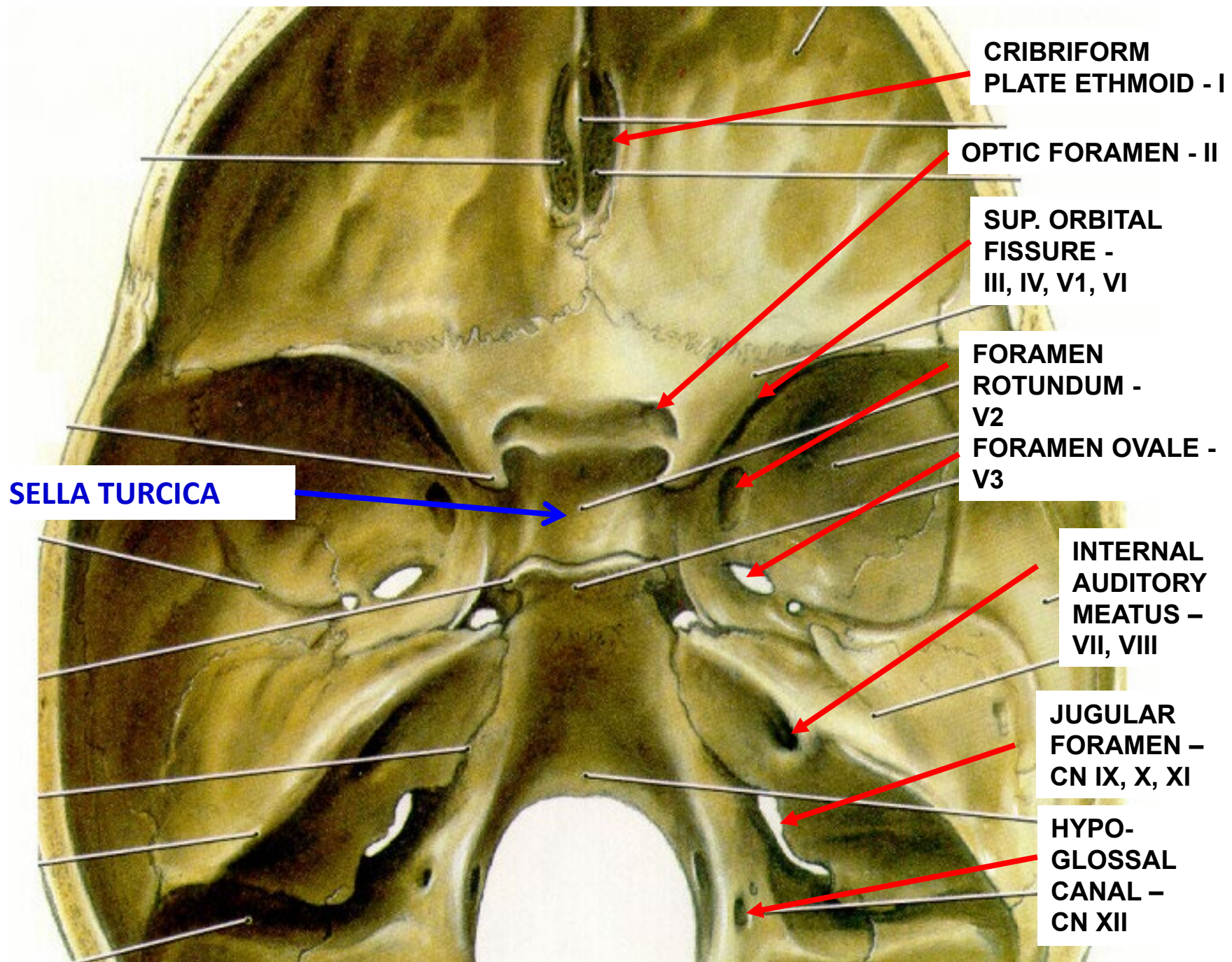
**HYPOGLOSSAL
CANAL –
CN XII**

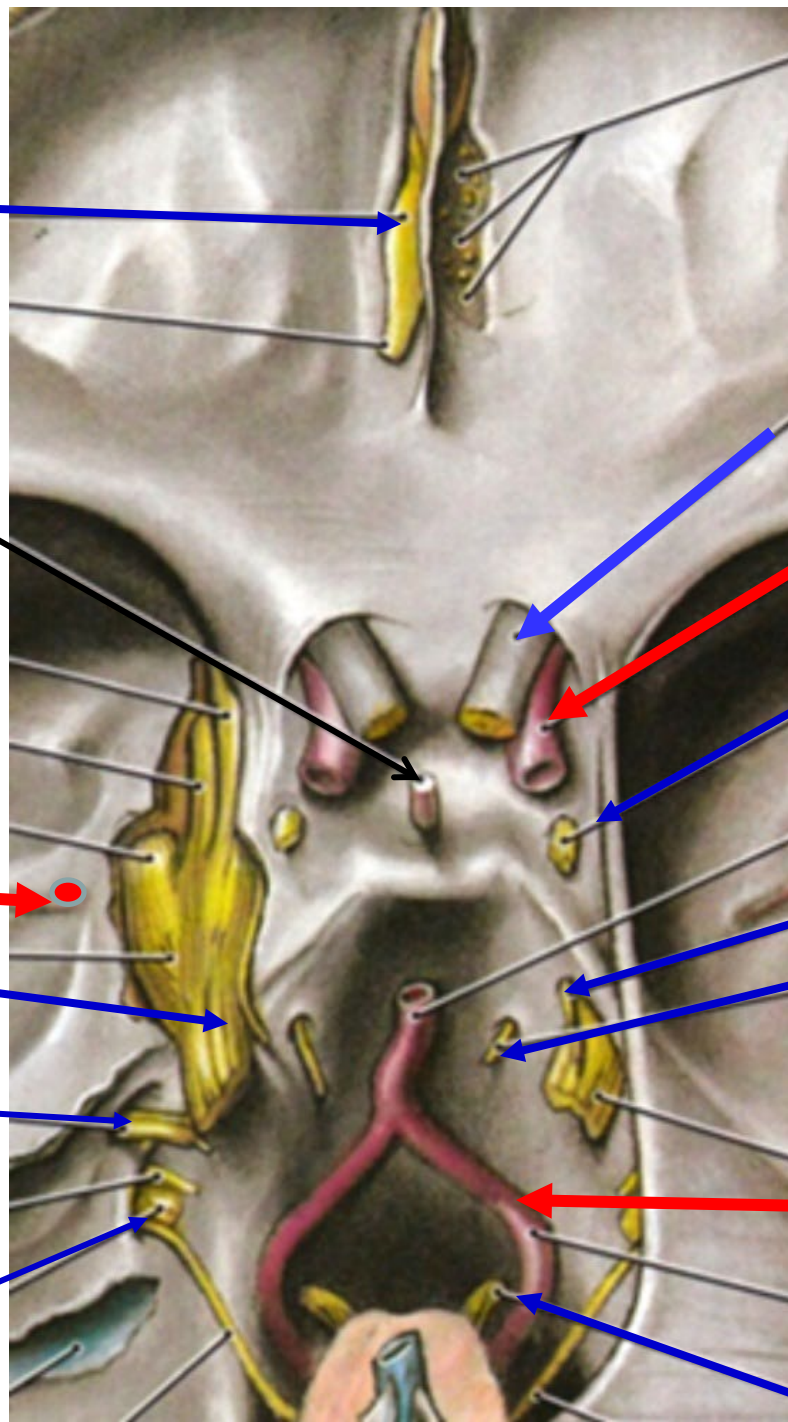
**FORAMEN
MAGNUM**

CRANIAL NERVES



- I. OLFACTORY - sense of smell
- II. OPTIC - vision
- III. OCULOMOTOR - eye movement
- IV. TROCHLEAR - eye movement
- V. TRIGEMINAL - touch, general sensation to skin, oral cavity, nasal cavity + more
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- VII. FACIAL - muscles of facial expression + lots more
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- XI. ACCESSORY - sternocleidomastoid, trapezius
- XII. HYPOGLOSSAL - muscles of tongue





**BRAINSTEM
PROSECTIONS
IDENTIFY**

I →

II

**PITUITARY
STALK**

INTERNAL CAROTID A.

V1

V2

V3

III

**MIDDLE
MENINGEAL A.** →

V

IV

VII

+VIII

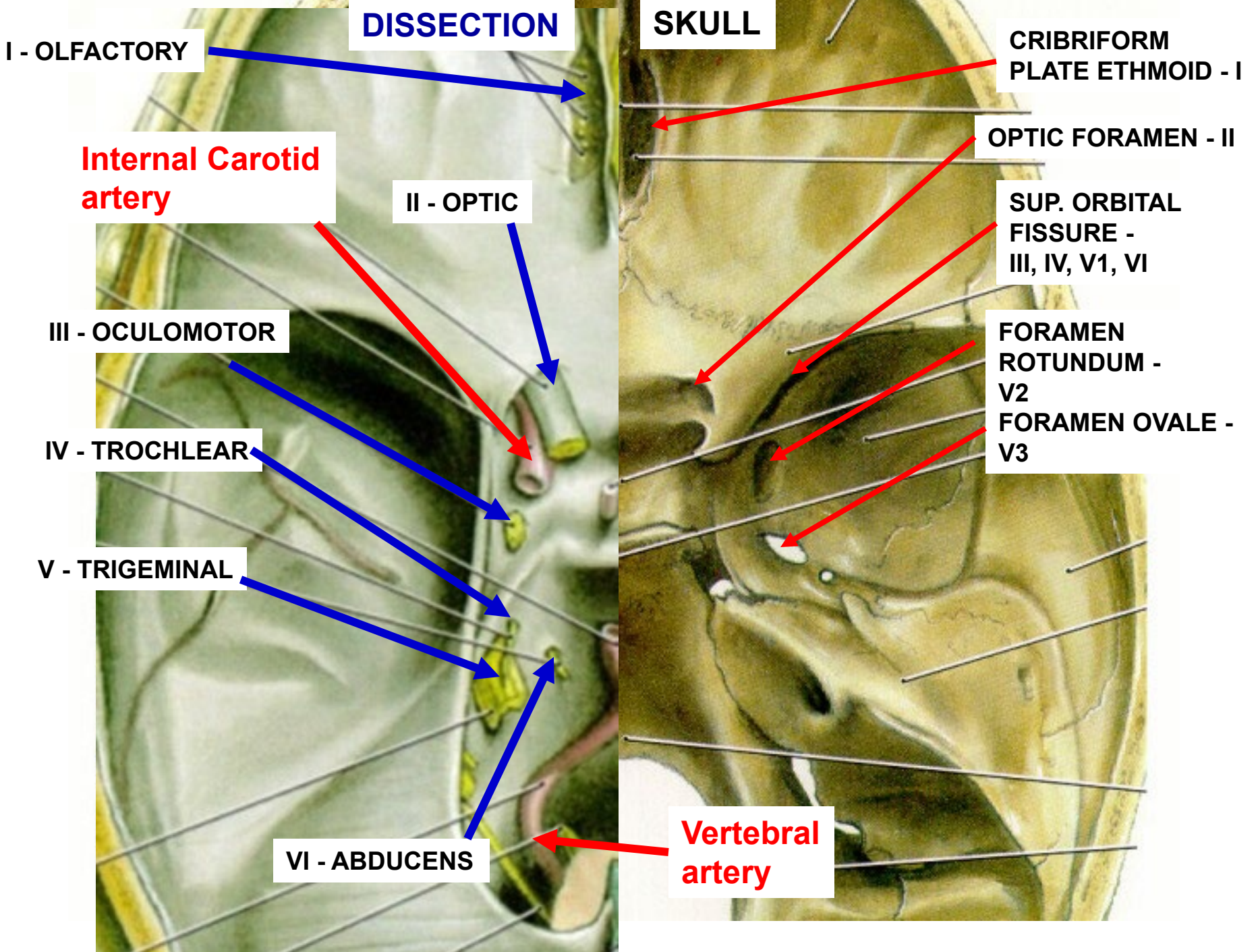
VI

IX, X

+XI

VERTEBRAL A.

XII



DISSECTION

SKULL

I - OLFACTORY

**CRIBRIFORM
PLATE ETHMOID - I**

**Internal Carotid
artery**

II - OPTIC

OPTIC FORAMEN - II

III - OCULOMOTOR

**SUP. ORBITAL
FISSURE -
III, IV, V1, VI**

IV - TROCHLEAR

**FORAMEN
ROTUNDUM -
V2**

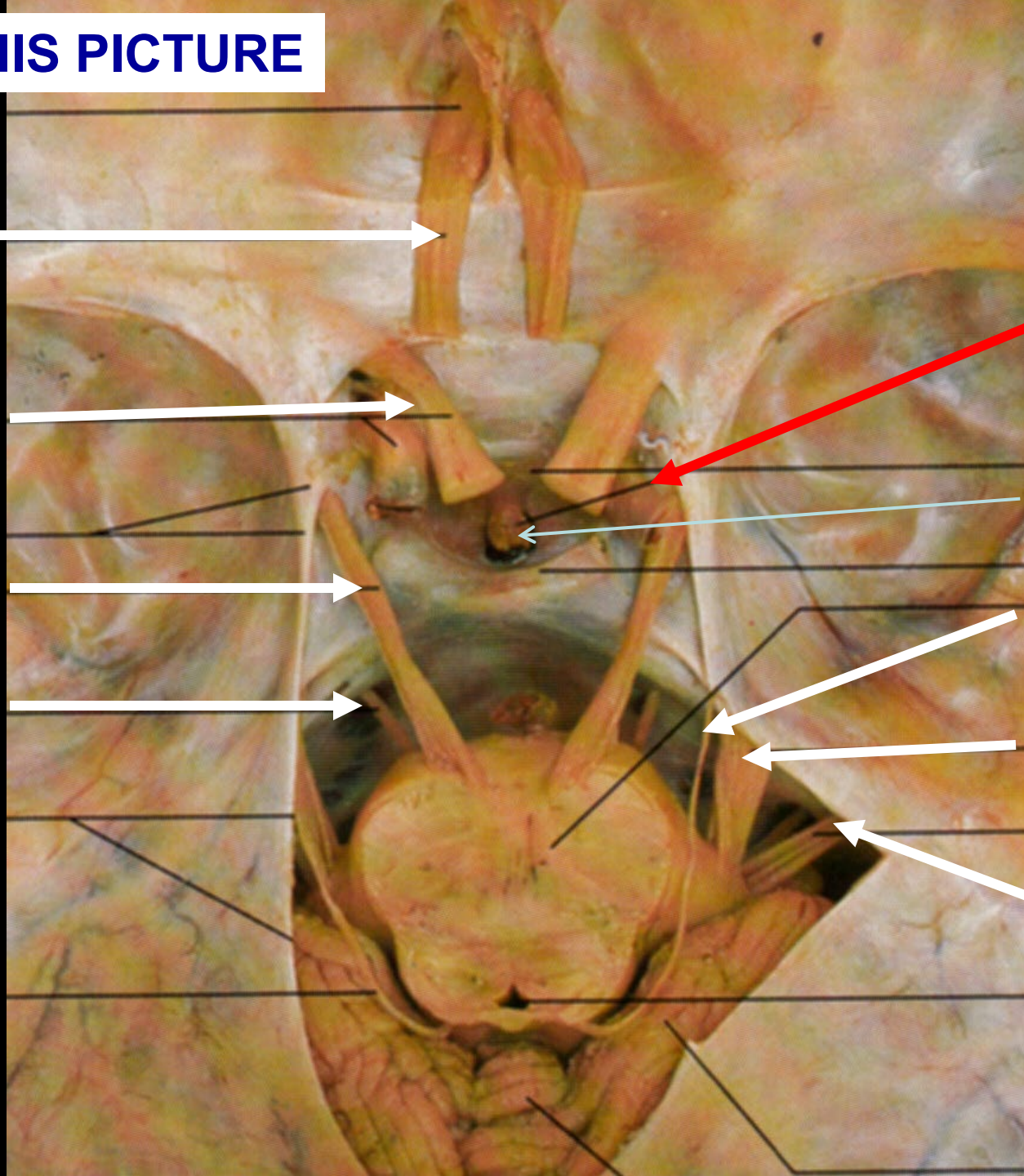
V - TRIGEMINAL

**FORAMEN OVALE -
V3**

VI - ABDUCENS

**Vertebral
artery**

STUDY THIS PICTURE



I Olfactory

II Optic

**III Oculo-
motor**

**VI
Abducens**

**INTERNAL
CAROTID
A.**

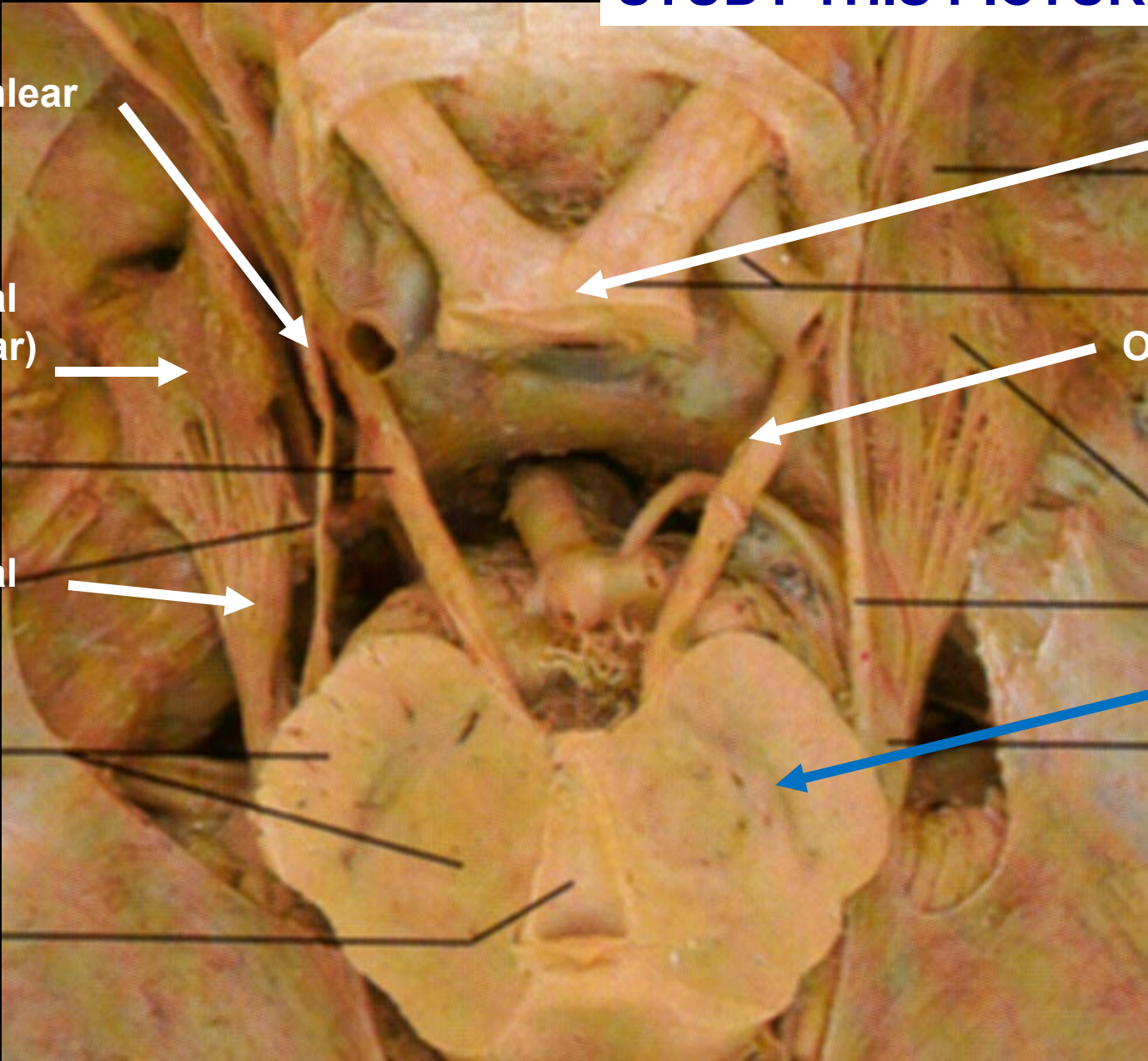
**Pituitary
stalk**

**IV
Trochlear**

**V
Trigeminal**

VII + VIII

STUDY THIS PICTURE



IV
Trochlear

**Trigeminal
(Semilunar)
Ganglion**

V
Trigeminal

II Optic
Chiasm

III
Oculomotor

**Substantia
Nigra
in
Midbrain
(Parkinson's
Disease)**

STRUCTURES PASSING THROUGH WALL OF CAVERNOUS SINUS - Int. Carotid A., Cranial N.'s III, IV, V1, V2, VI;
Clinical sign of Infection in Sinus – ‘BLURRED’ VISION (Diplopia)

