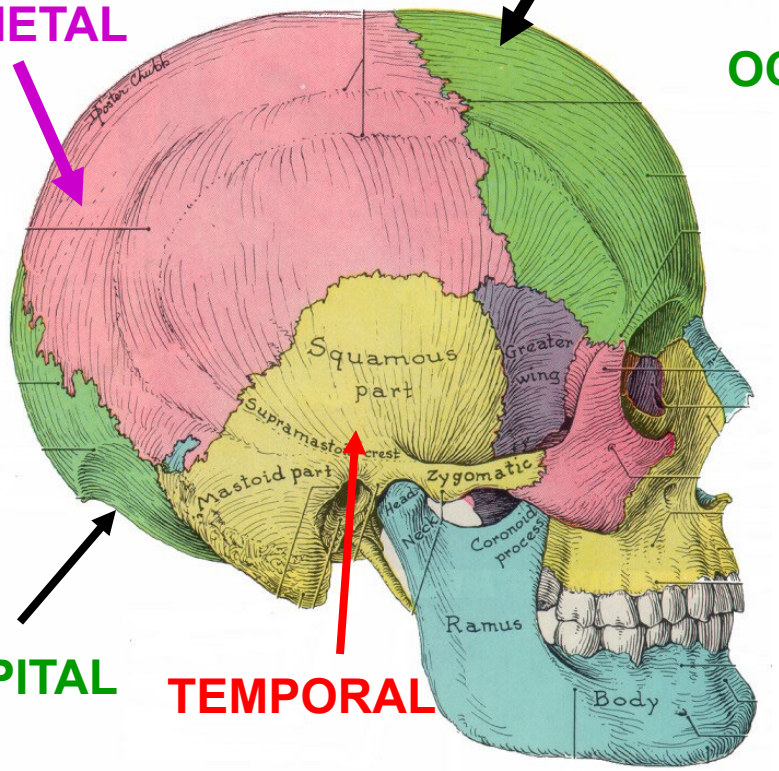
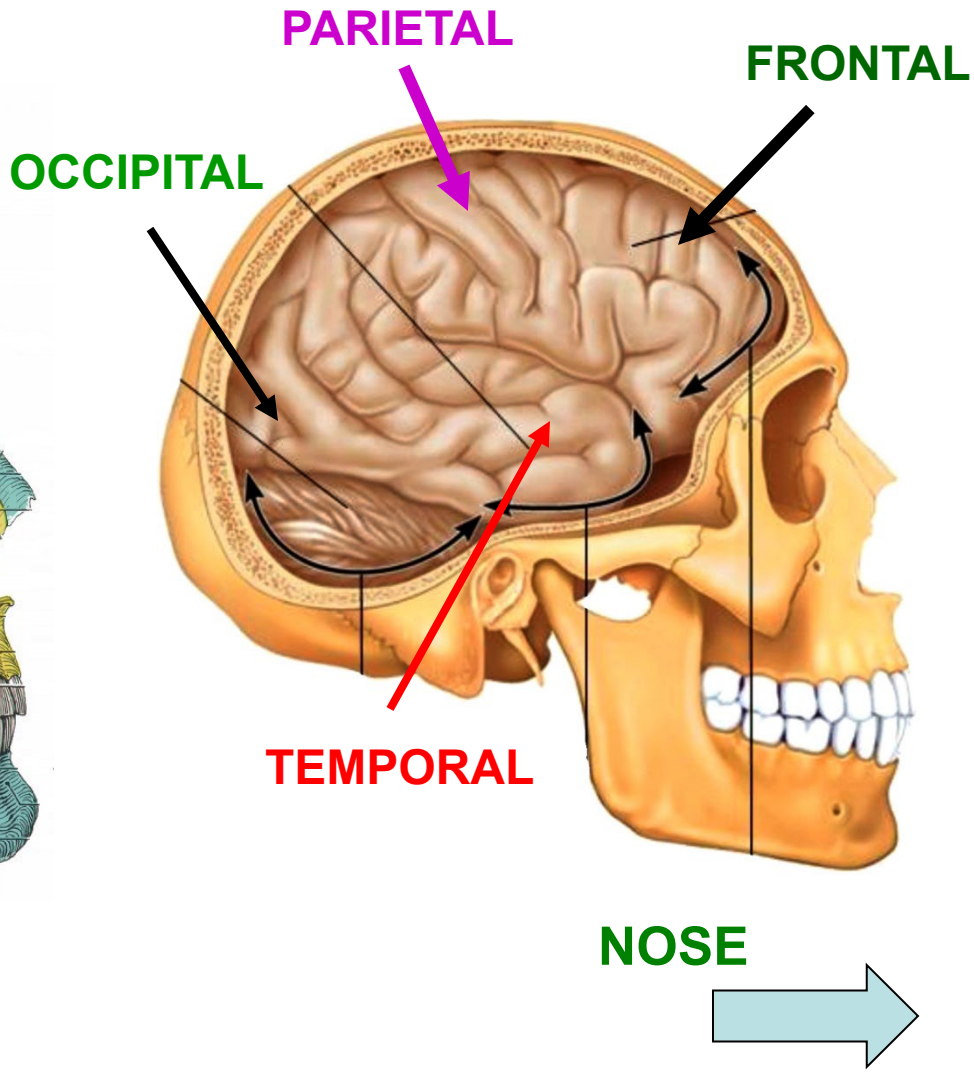
FINAL REVIEW SESSION 2024

Skull (sutures, foramina),
Reflexes Cranial Nerves,
Nasal Cavity

BONES OF SKULL



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



SUTURES AND LANDMARKS

(NEWBORN)

NOSE

1. CORONAL SUTURE

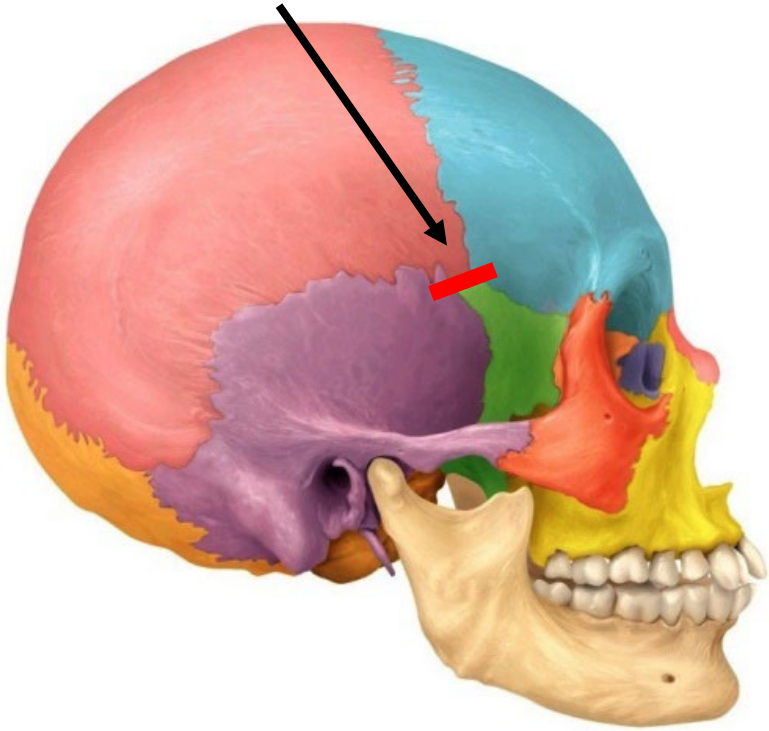
BREGMA - (ANTERIOR FONTANELLE)

2. SAGITTAL SUTURE

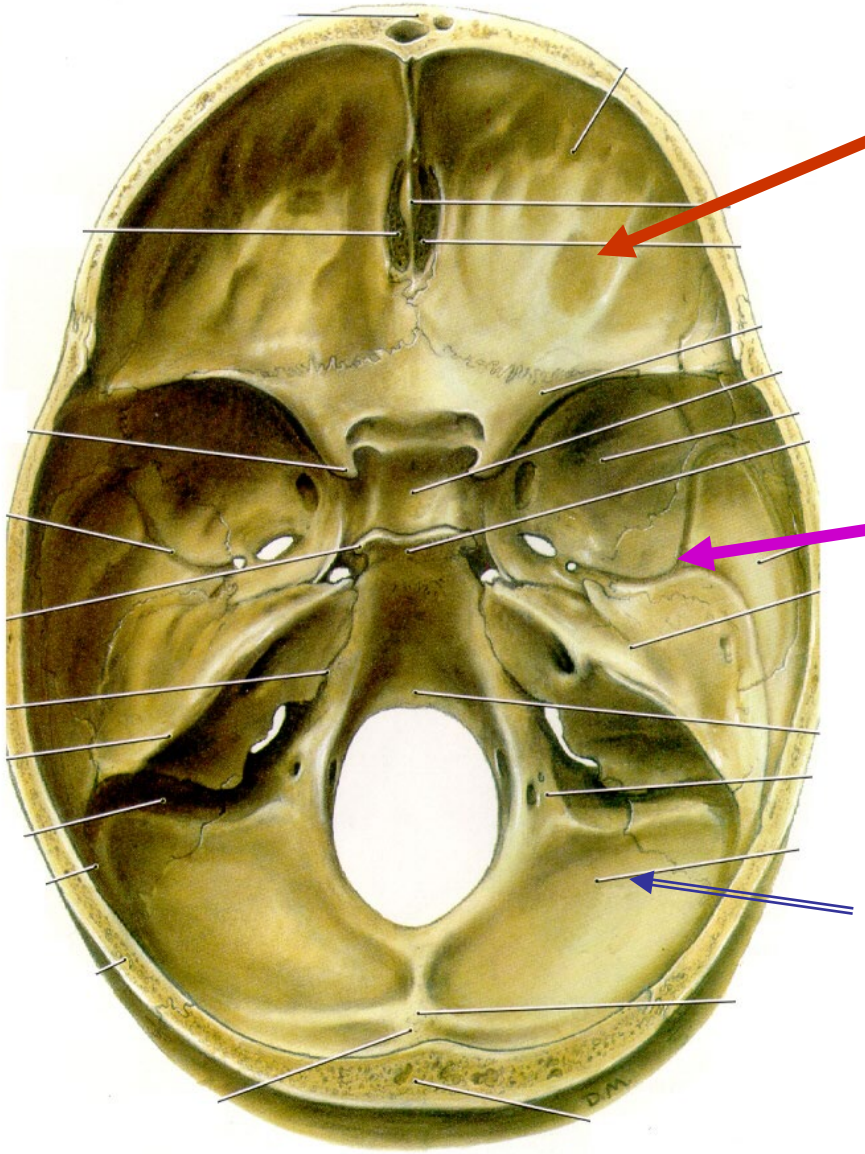
LAMBDA - (POSTERIOR FONTANELLE)

3. LAMBDOIDAL SUTURE

PTERION - (LATERAL FONTANELLE)



CRANIAL CAVITY- DIVIDED INTO DEPRESSIONS (FOSSAE)

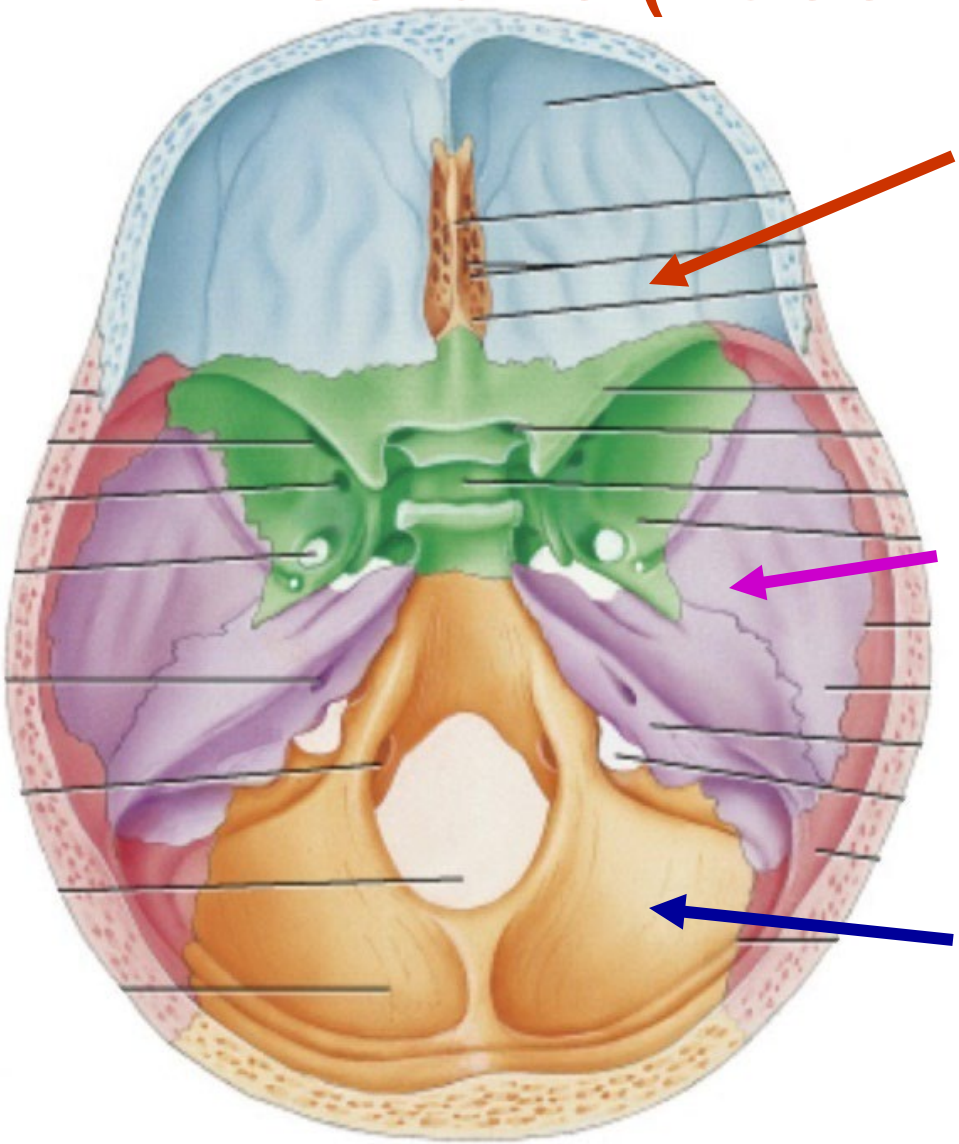


ANTERIOR CRANIAL FOSSA (ROOF OF NASAL CAVITY, ORBIT)

MIDDLE CRANIAL FOSSA (ORBIT, NASAL CAVITY, FACE)

POSTERIOR CRANIAL FOSSA (FACE, ORAL CAVITY, NECK)

CRANIAL CAVITY- DIVIDED INTO DEPRESSIONS (FOSSAE)

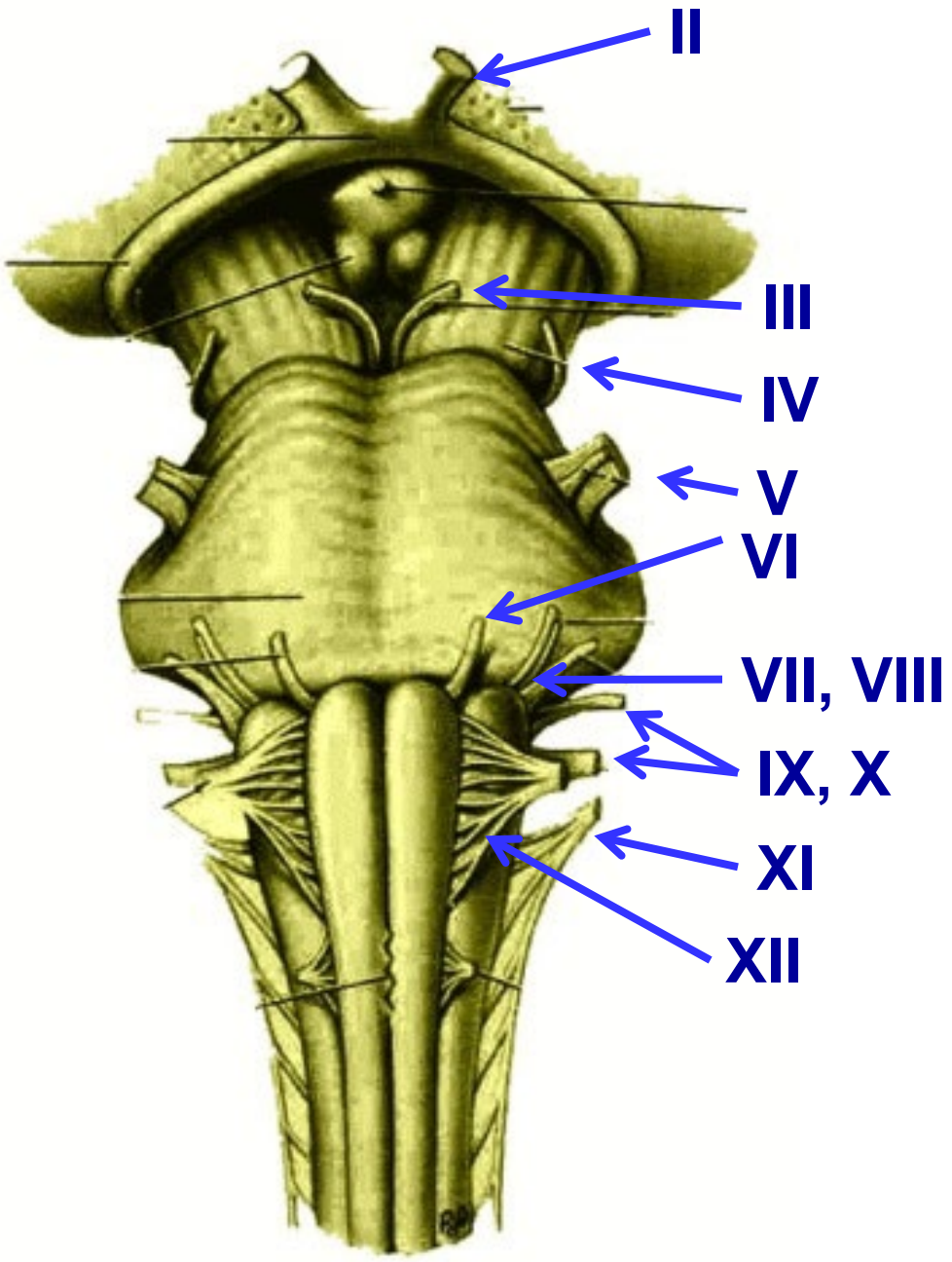


ANTERIOR CRANIAL FOSSA (ROOF OF NASAL CAVITY, ORBIT)

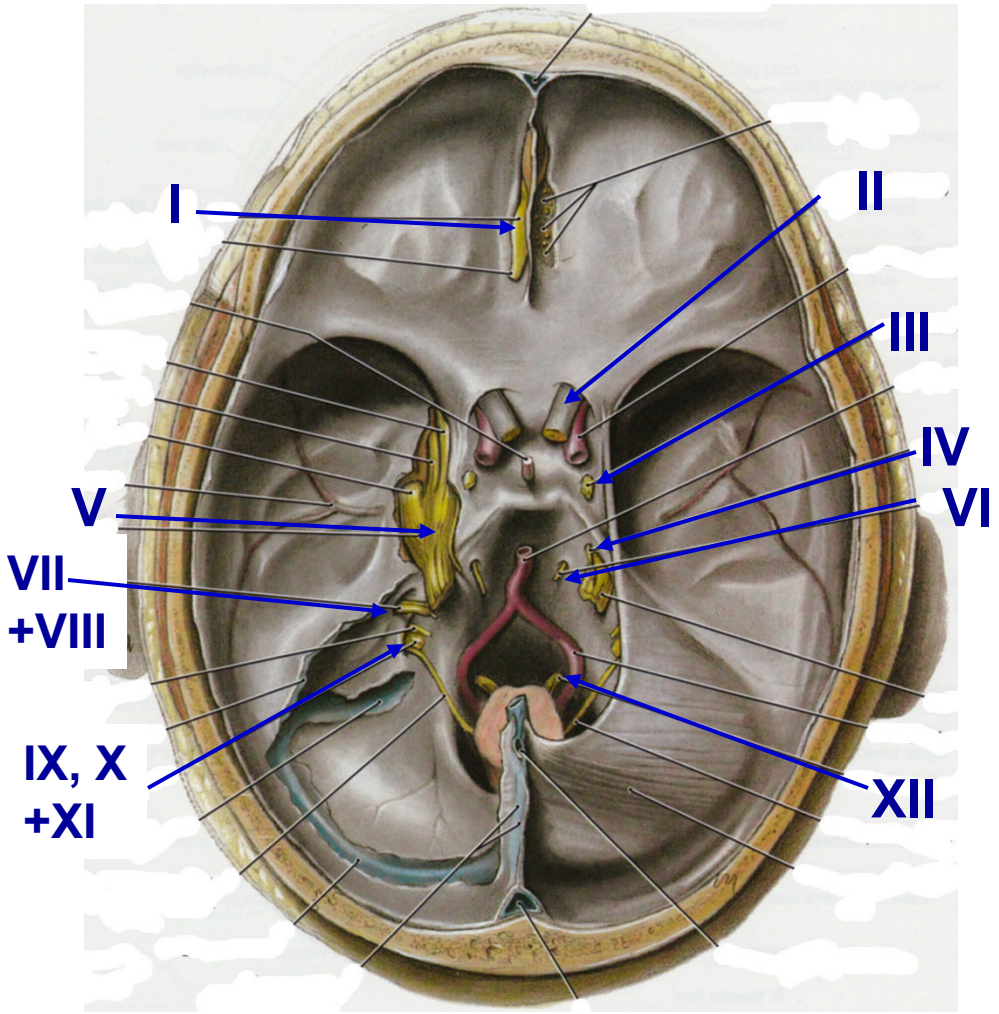
MIDDLE CRANIAL FOSSA (ORBIT, NASAL CAVITY, FACE)

POSTERIOR CRANIAL FOSSA (FACE, ORAL CAVITY, NECK)

CRANIAL NERVES ARE NUMBERED ACCORDING TO THEIR POSITION ON THE BRAINSTEM



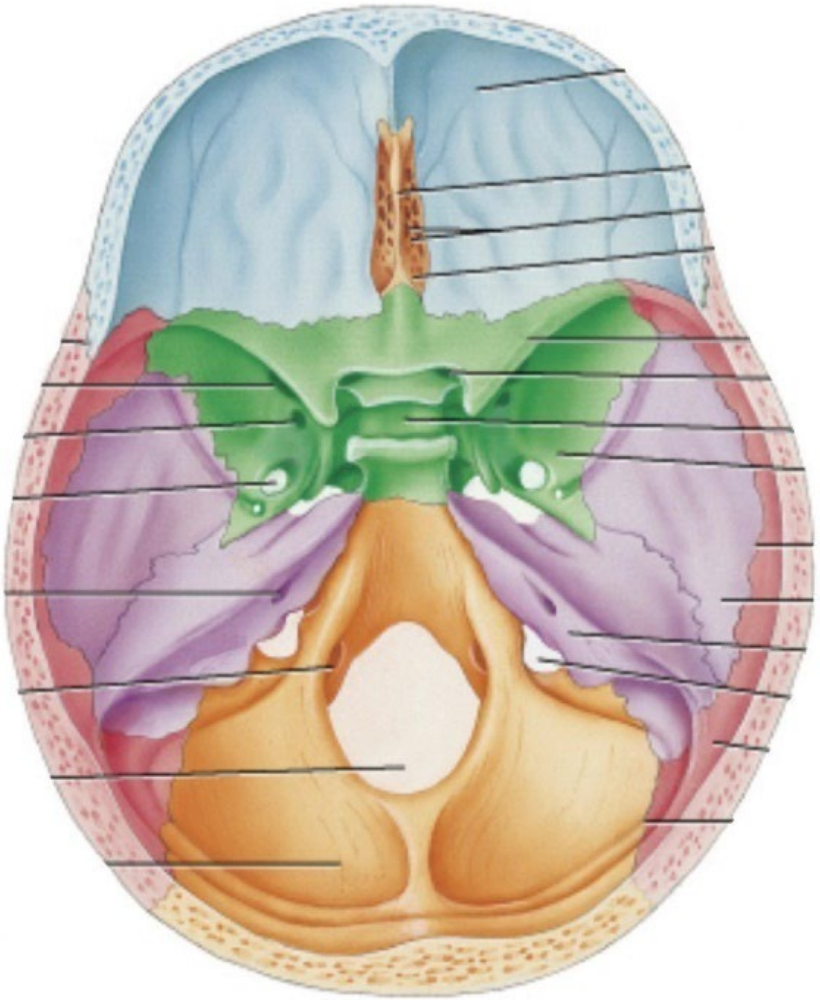
CRANIAL NERVES



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

ANTERIOR

NOSE



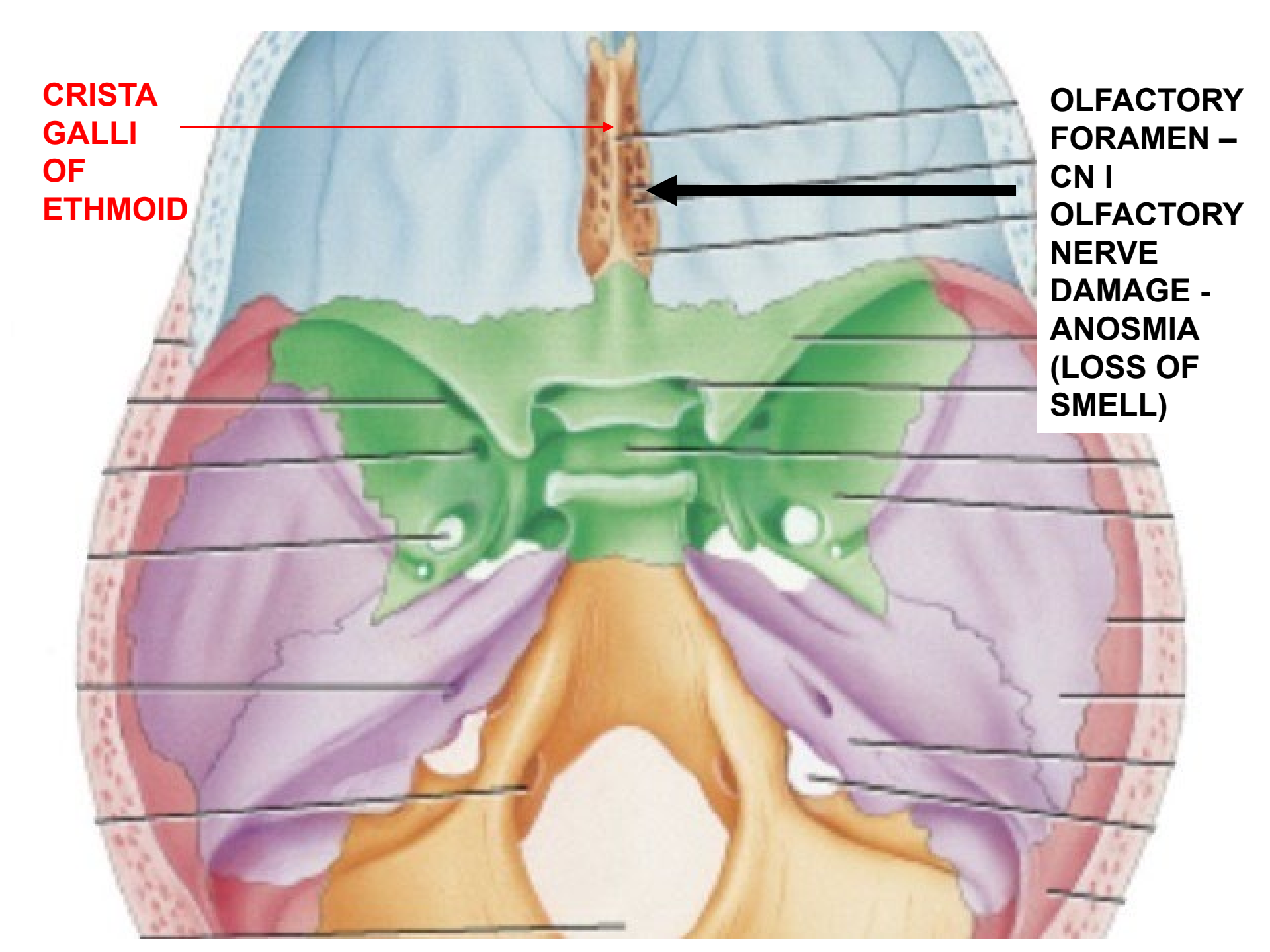
POSTERIOR

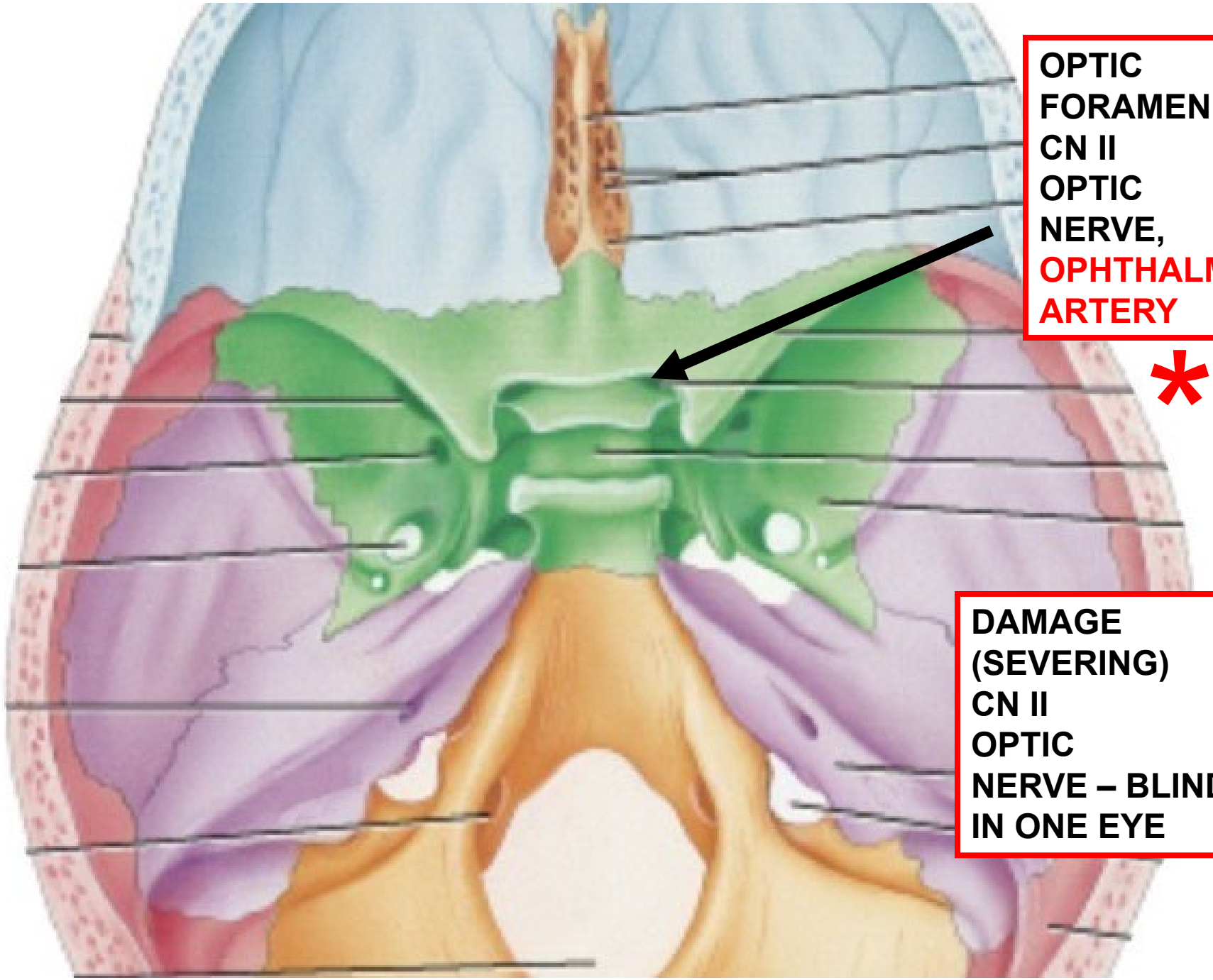
CRANIAL NERVES

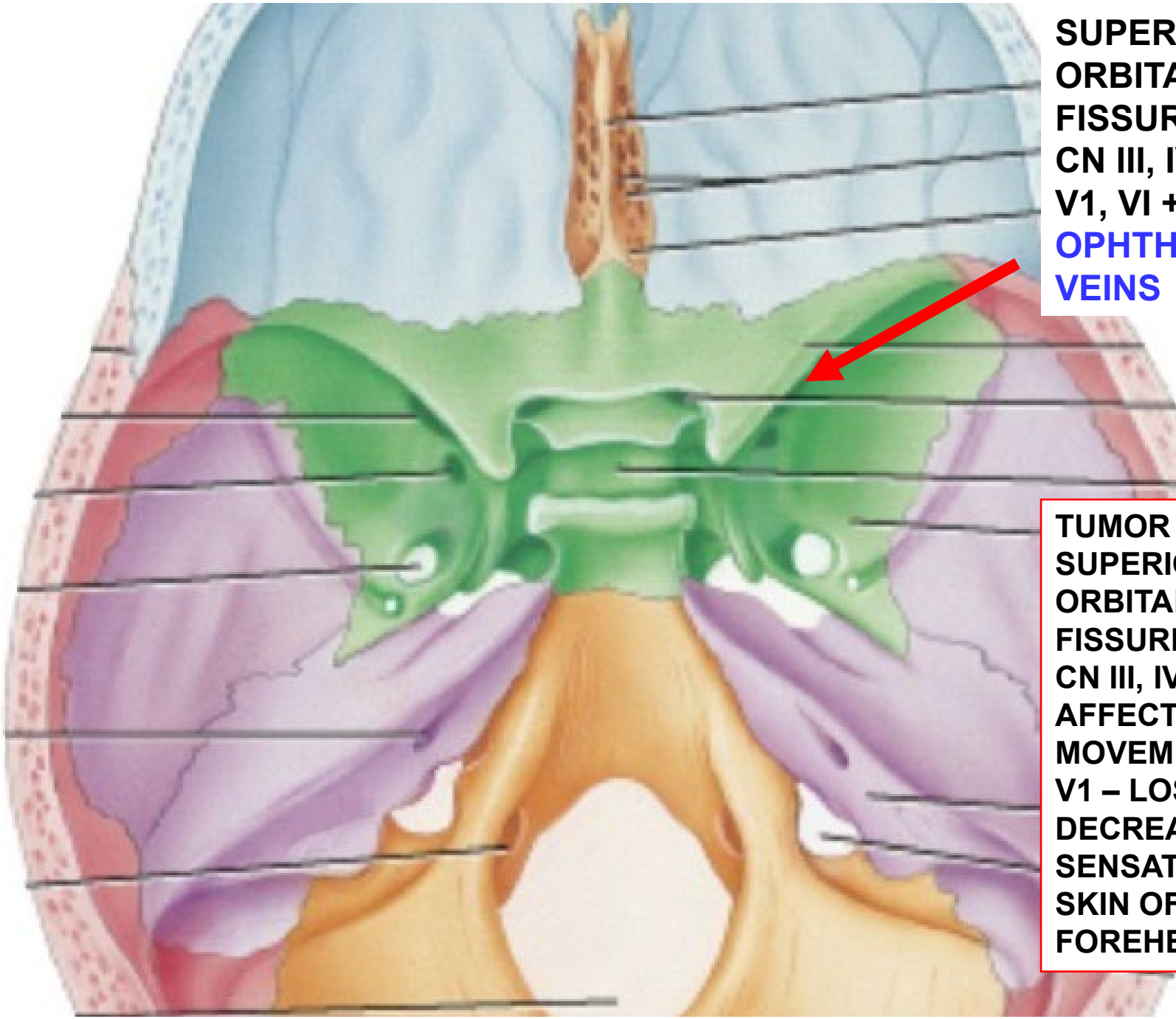
I

II

III, IV, V1, VI
V2
V3
Middle Meningeal A.
VII, VIII
IX, X, XI
XII

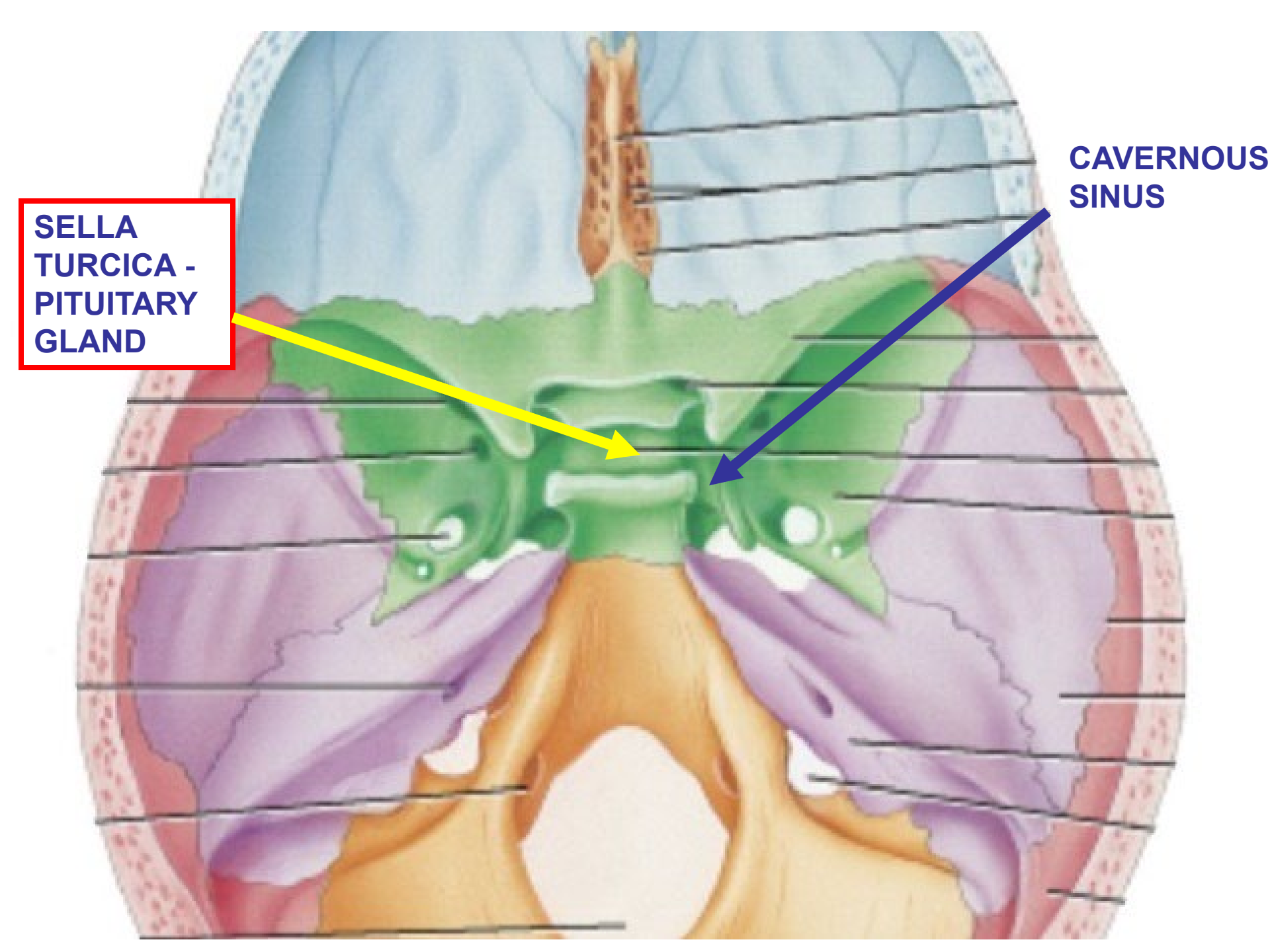

CRISTA GALLI OF ETHMOID
OLFACTORY FORAMEN – CN I
OLFACTORY NERVE DAMAGE - ANOSMIA (LOSS OF SMELL)


OPTIC FORAMEN
CN II OPTIC NERVE,
OPHTHALMIC ARTERY
*
DAMAGE (SEVERING) CN II OPTIC NERVE – BLIND IN ONE EYE

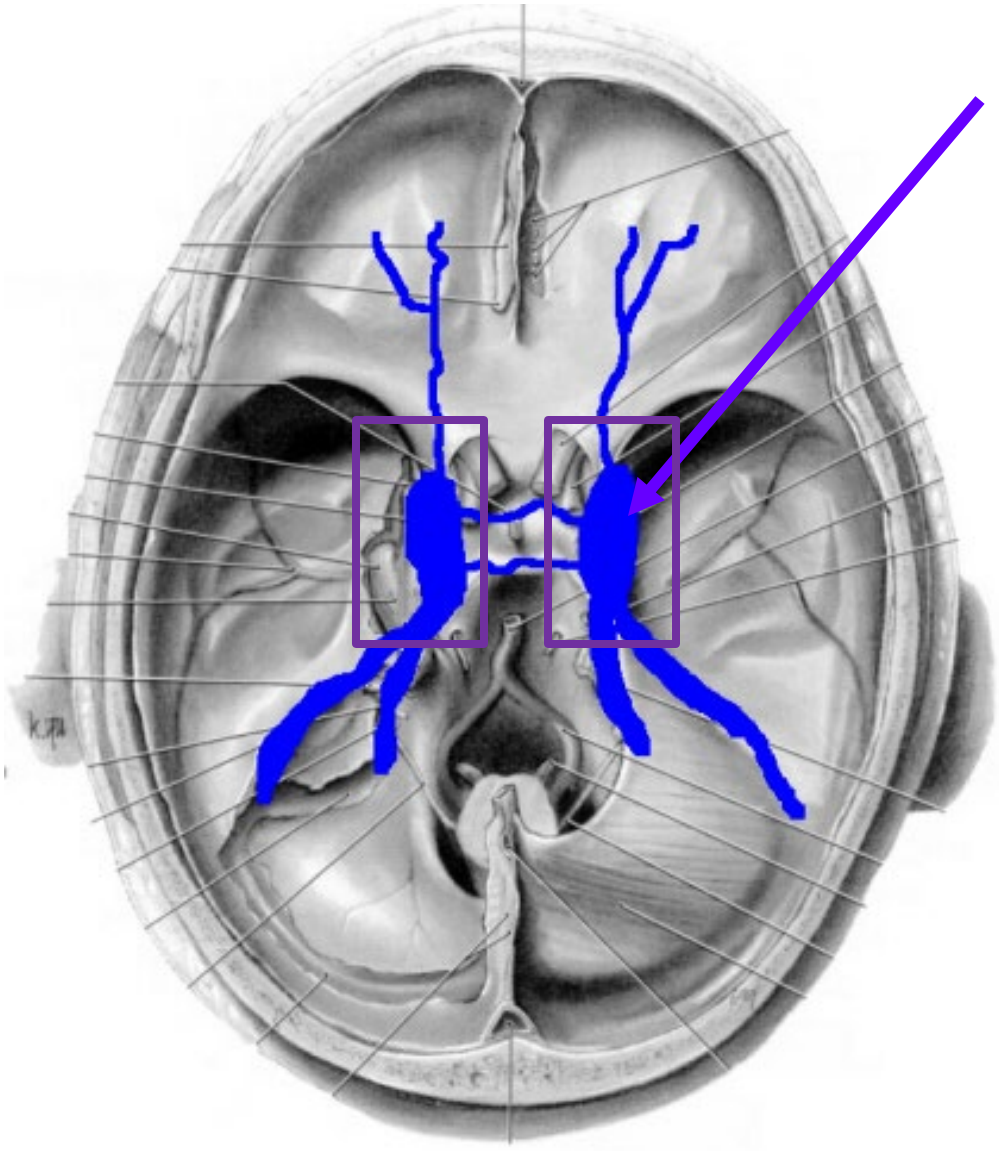


SUPERIOR ORBITAL FISSURE – CN III, IV V1, VI + OPHTHALMIC VEINS

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

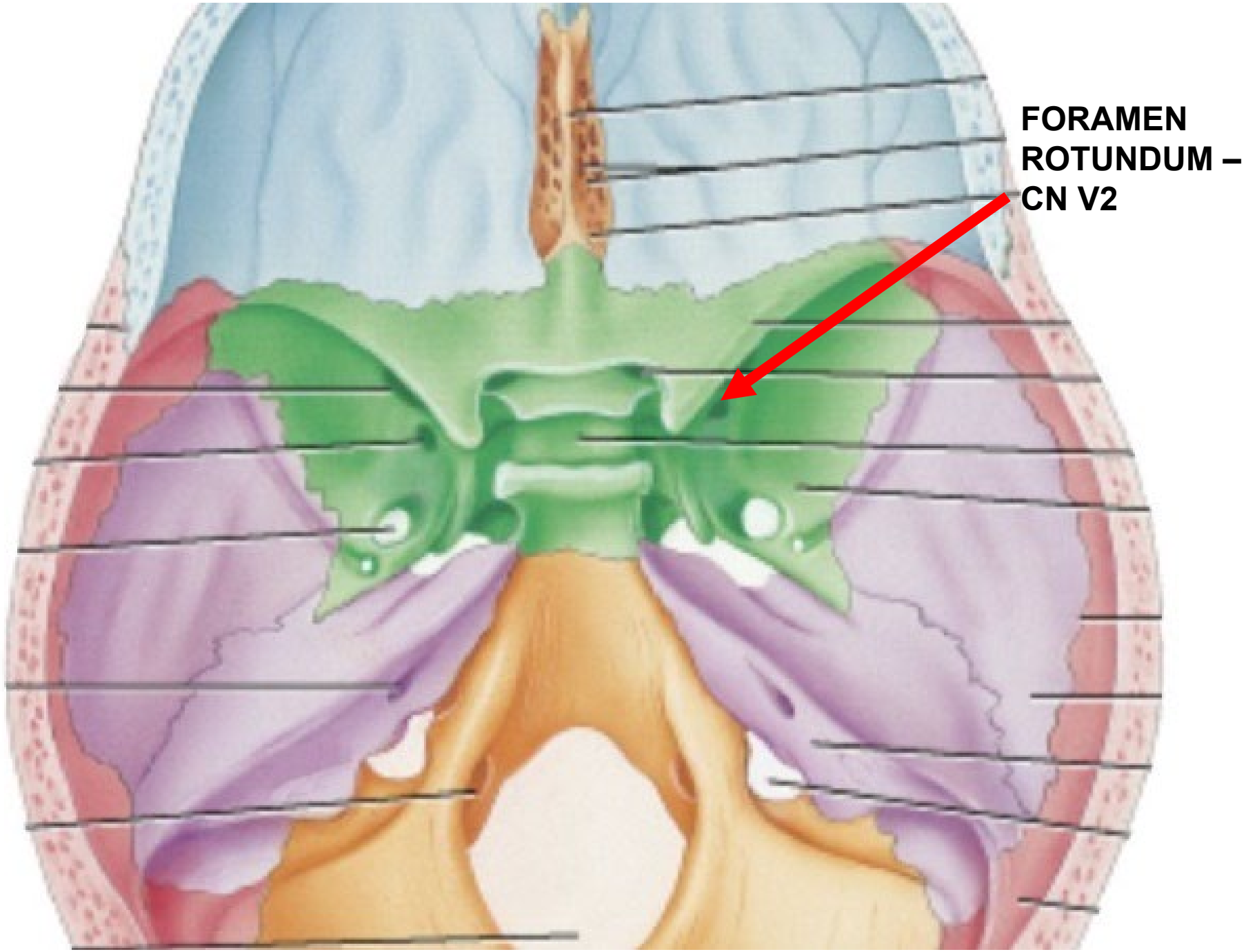

SELLA TURCICA - PITUITARY GLAND
CAVERNOUS SINUS

CAVERNOUS SINUS



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 - SYMPTOMS EYE MOVEMENTS (NOT CN II); DIPLOPIA,


FORAMEN
ROTUNDUM –
CN V2

TRIGEMINAL NERVE - 3 DIVISIONS (MAJOR BRANCHES)

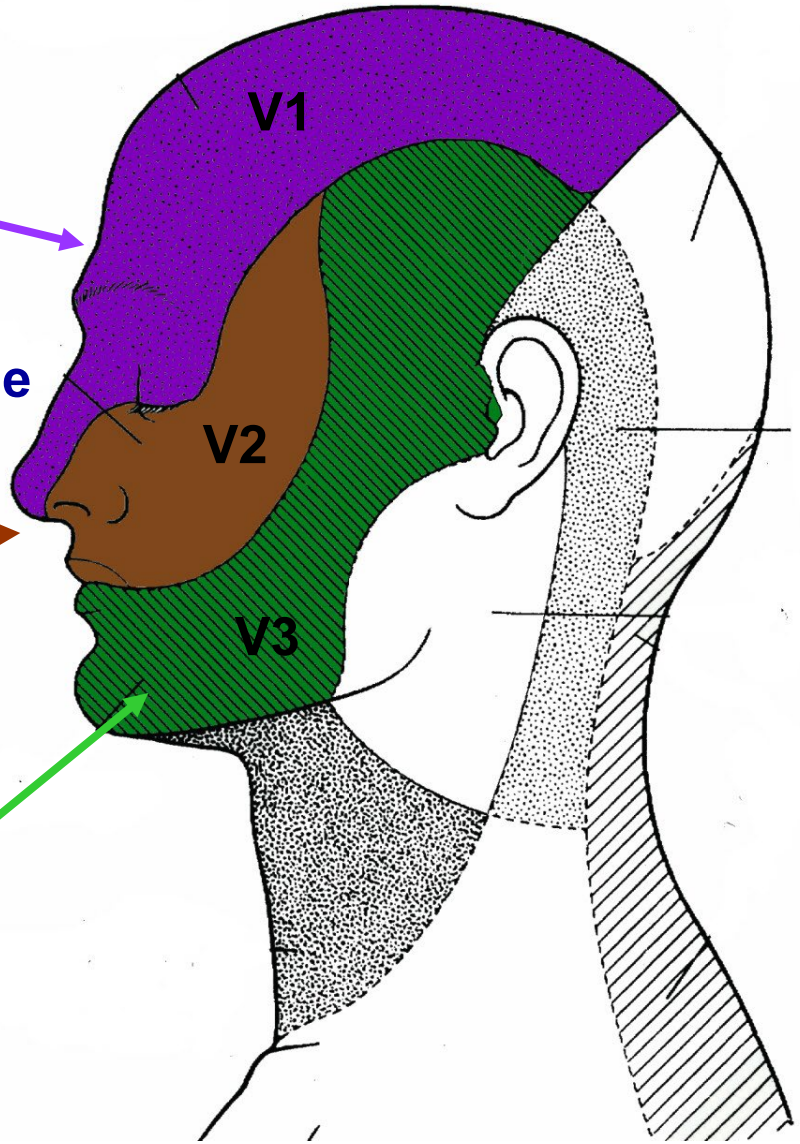
V1 – OPHTHALMIC DIVISION (NERVE)

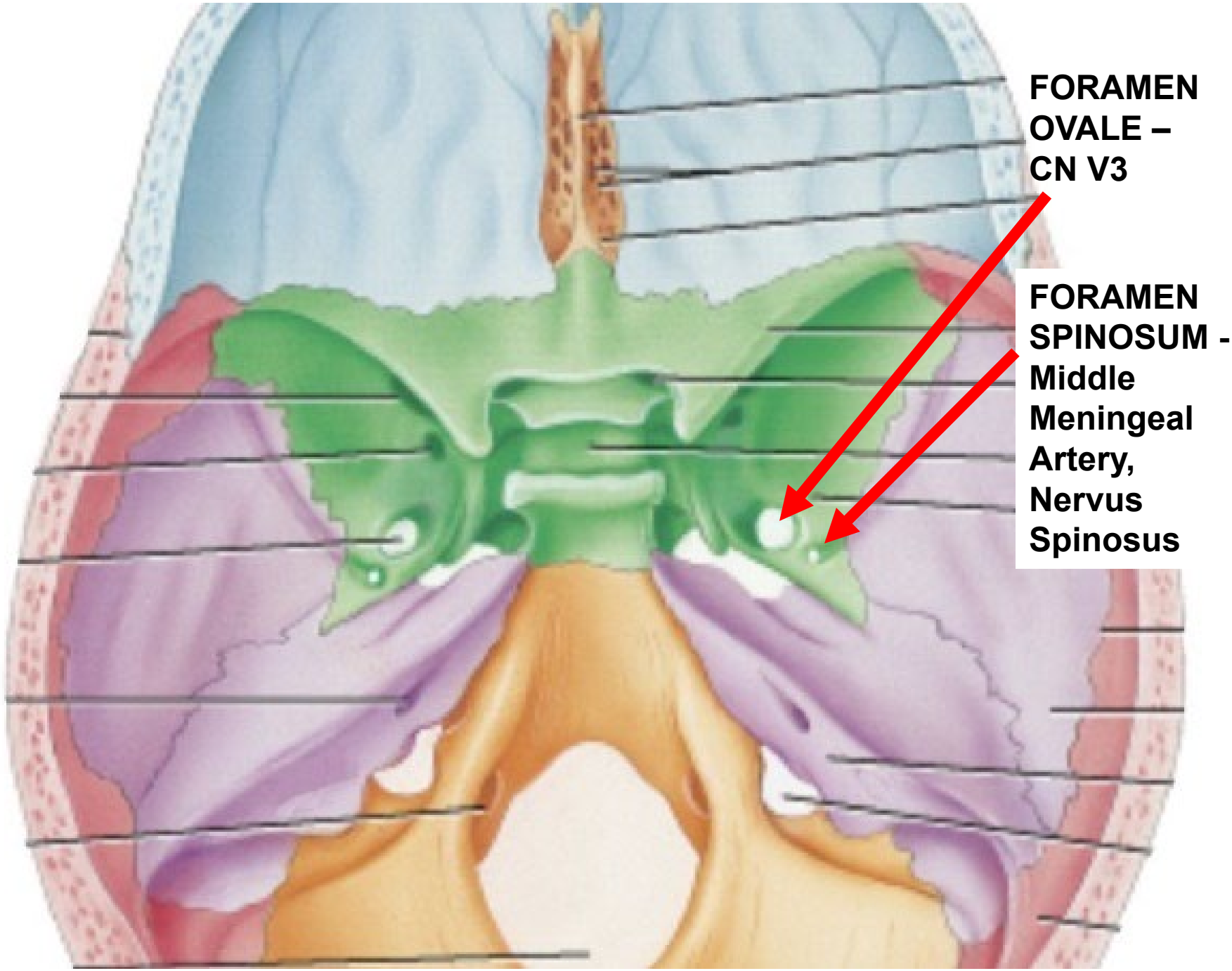
Boundary- Lateral edge of eye

V2 – MAXILLARY DIVISION (NERVE)

Boundary Lateral edge of mouth

V3 – MANDIBULAR DIVISION (NERVE)

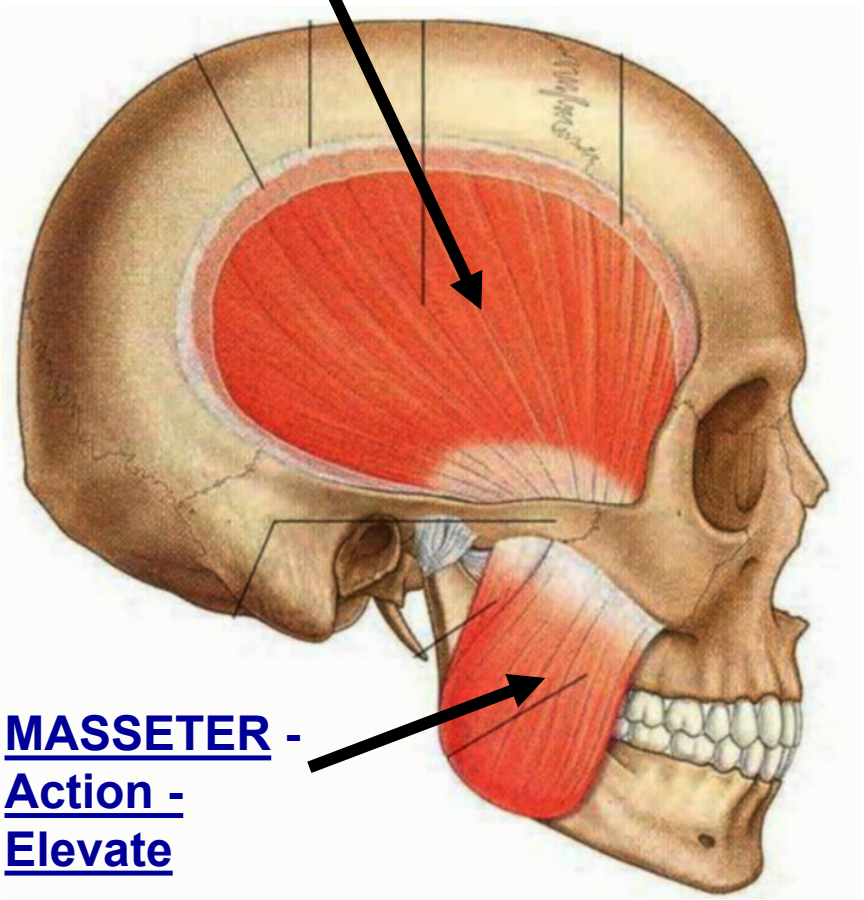



FORAMEN OVALE – CN V3
FORAMEN SPINOSUM - Middle Meningeal Artery, Nervus Spinosus

MUSCLES OF MASTICATION

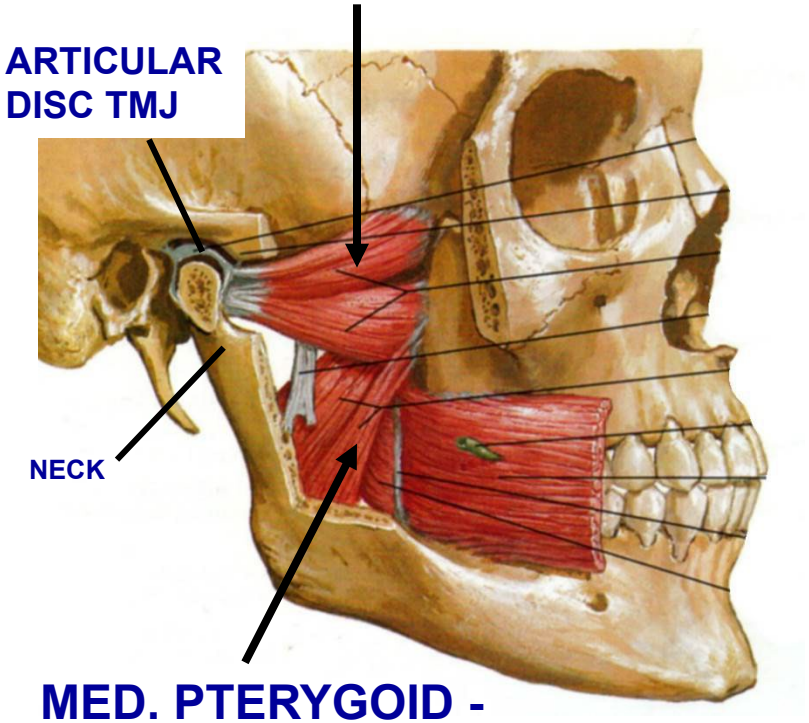
- ALL INN BRANCHIOMOTOR (First Arch) - V3
- ELEVATE = CLOSE; DEPRESS = OPEN MOUTH

TEMPORALIS - Action - Elevate, Retrude



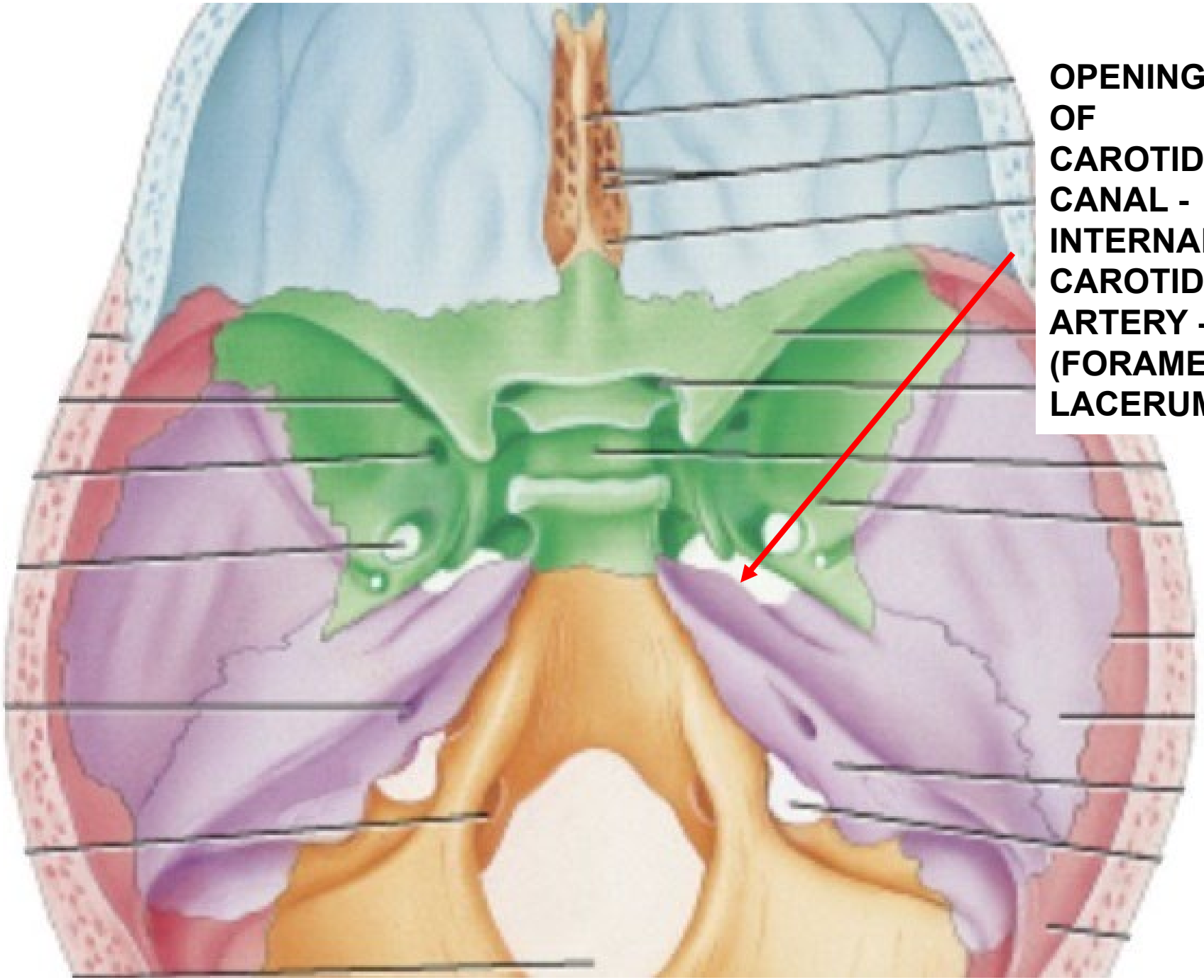
MASSETER - Action - Elevate

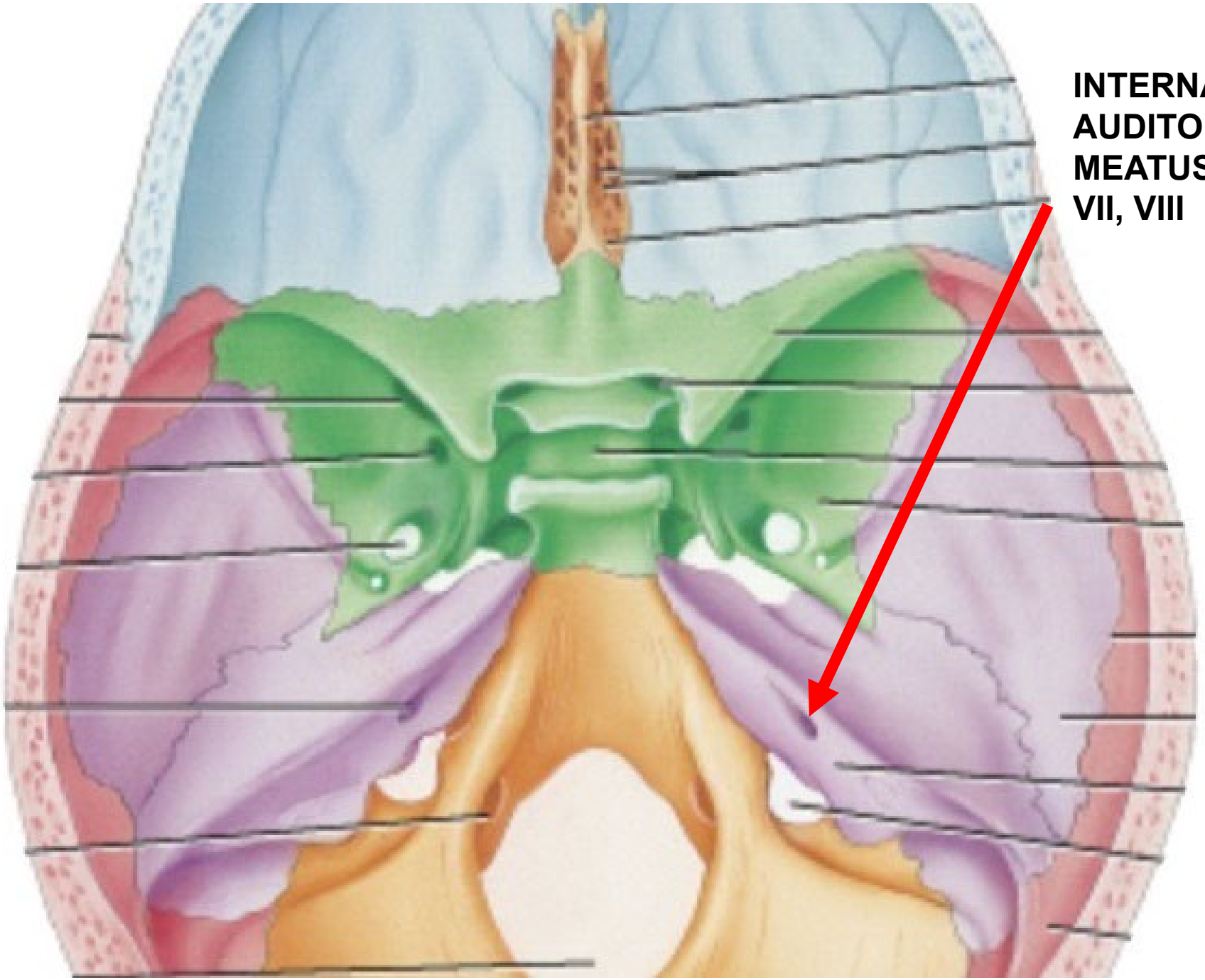
LATERAL PTERYGOID - Action - Depress (OPEN MOUTH), Protrude Pull Disc Forward

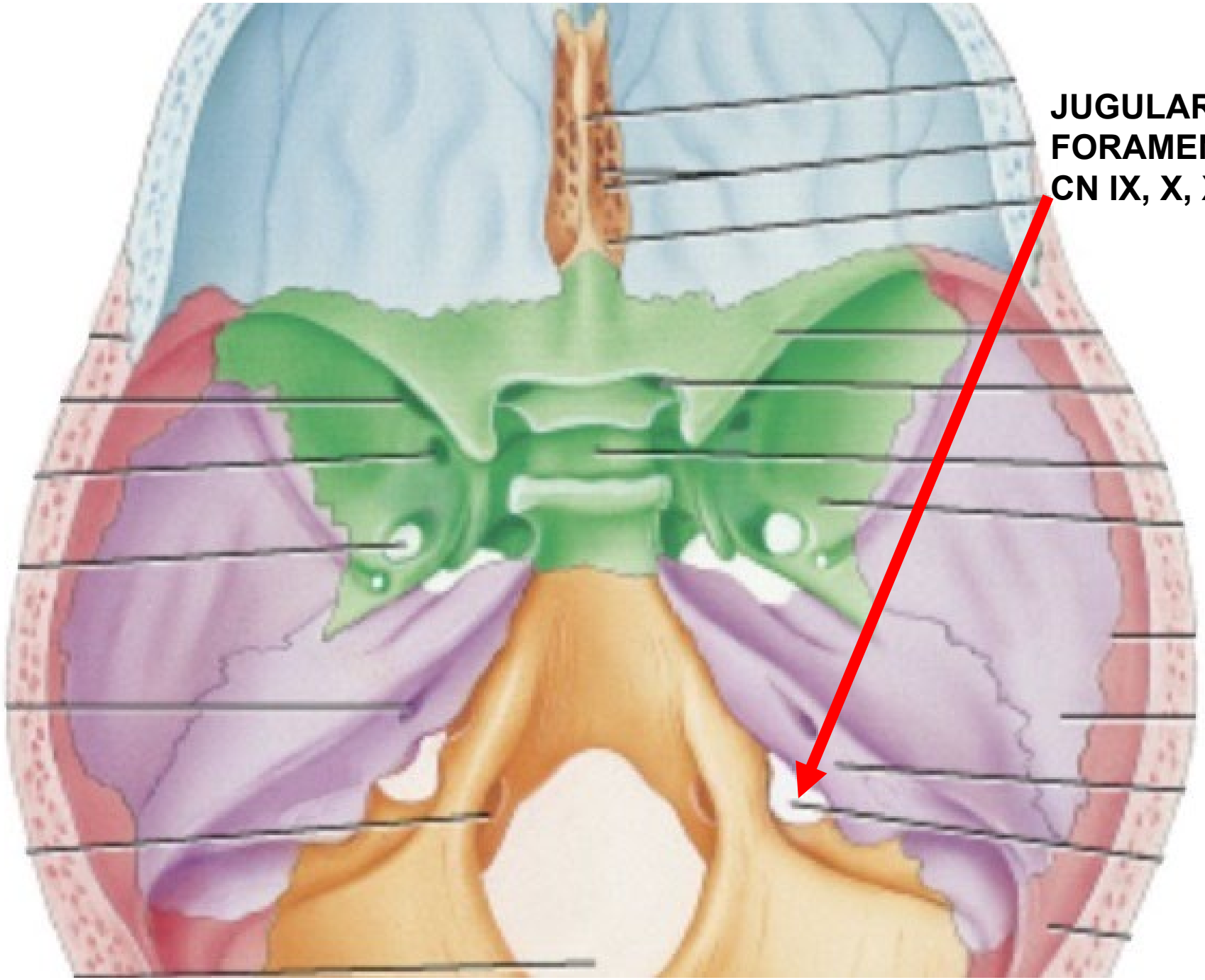


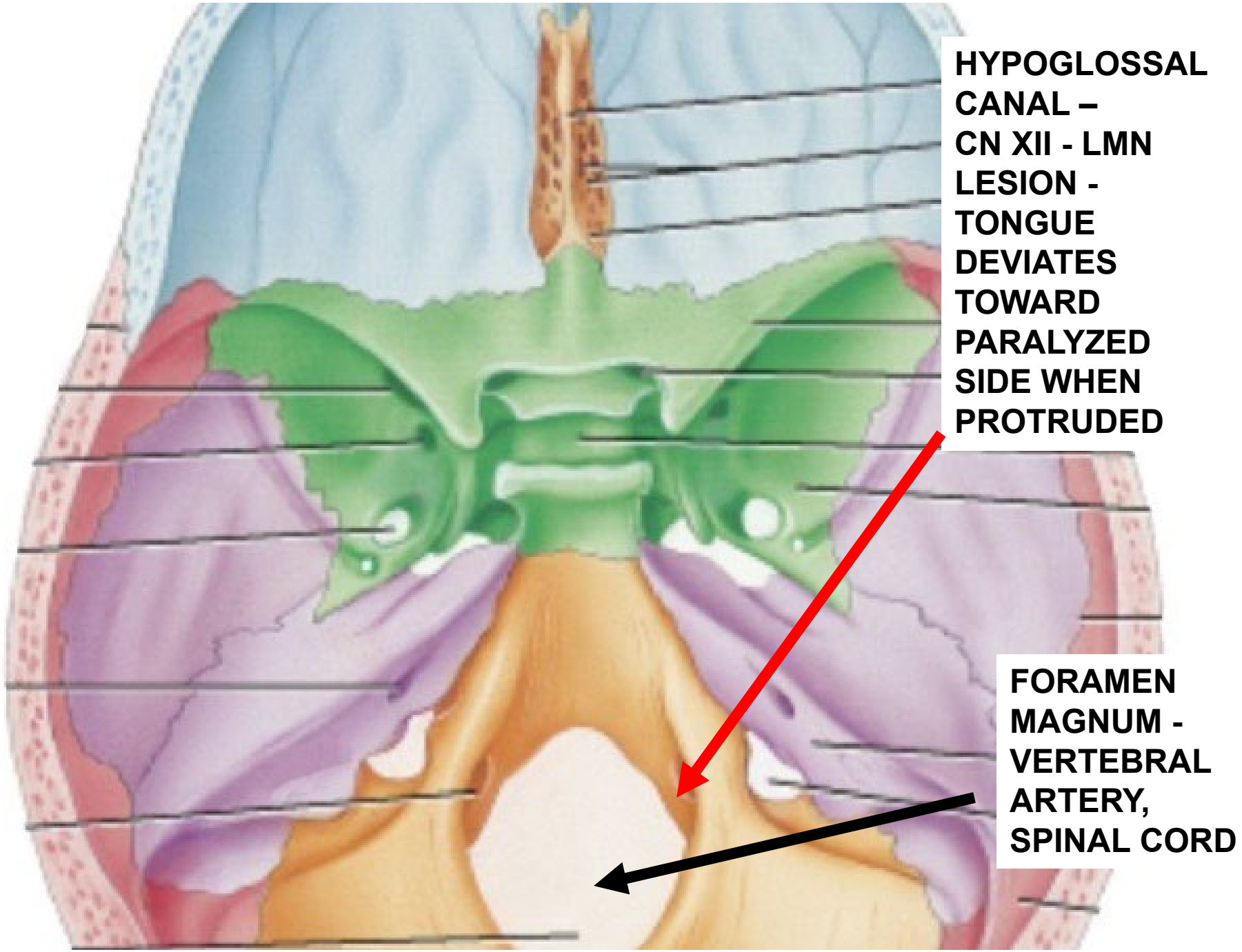
MED. PTERYGOID - Action - Elevate

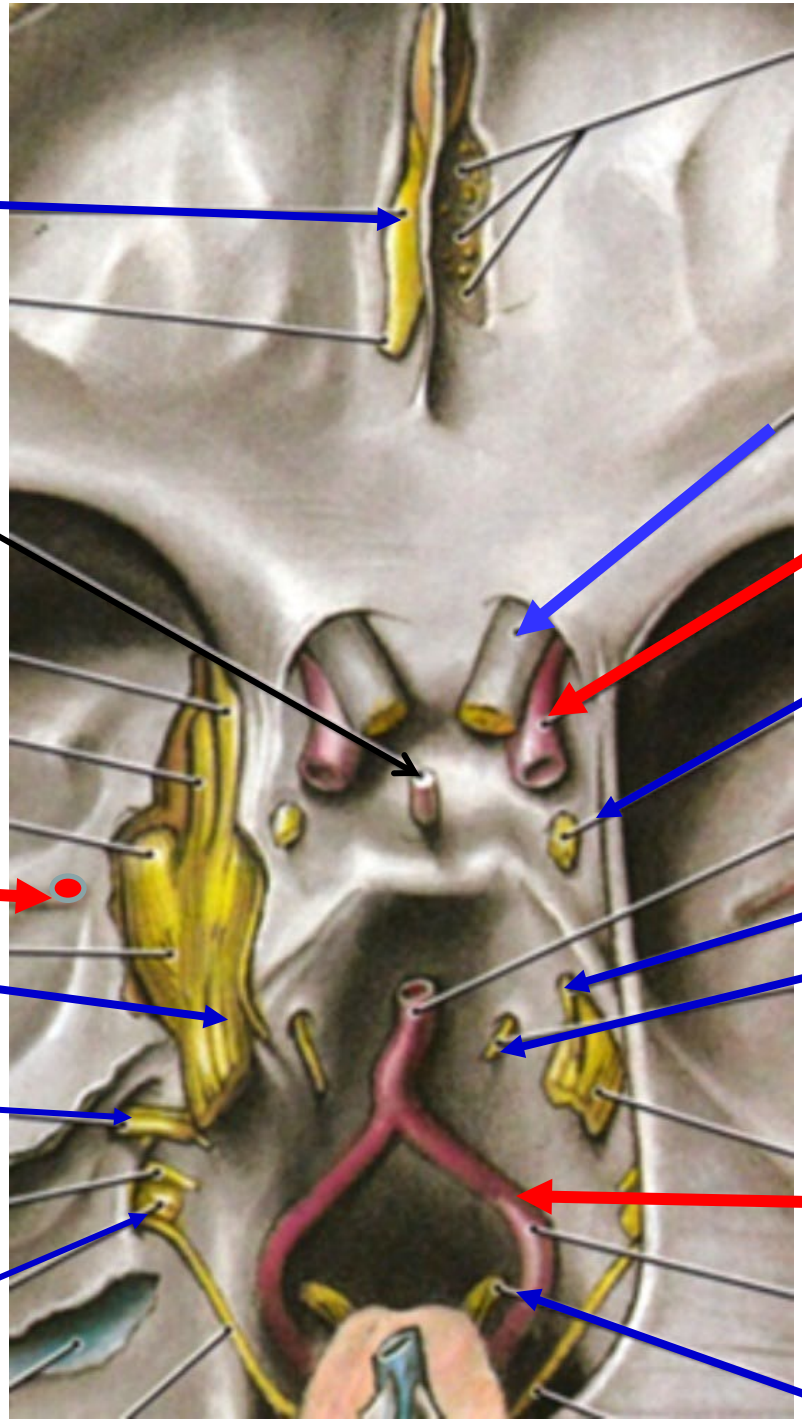
DAMAGE V3: DIFFICULTY CHEWING; OPEN MOUTH JAW DEVIATES TO PARALYZED SIDE (PUSHED BY INTACT LAT. PTERYGOID)

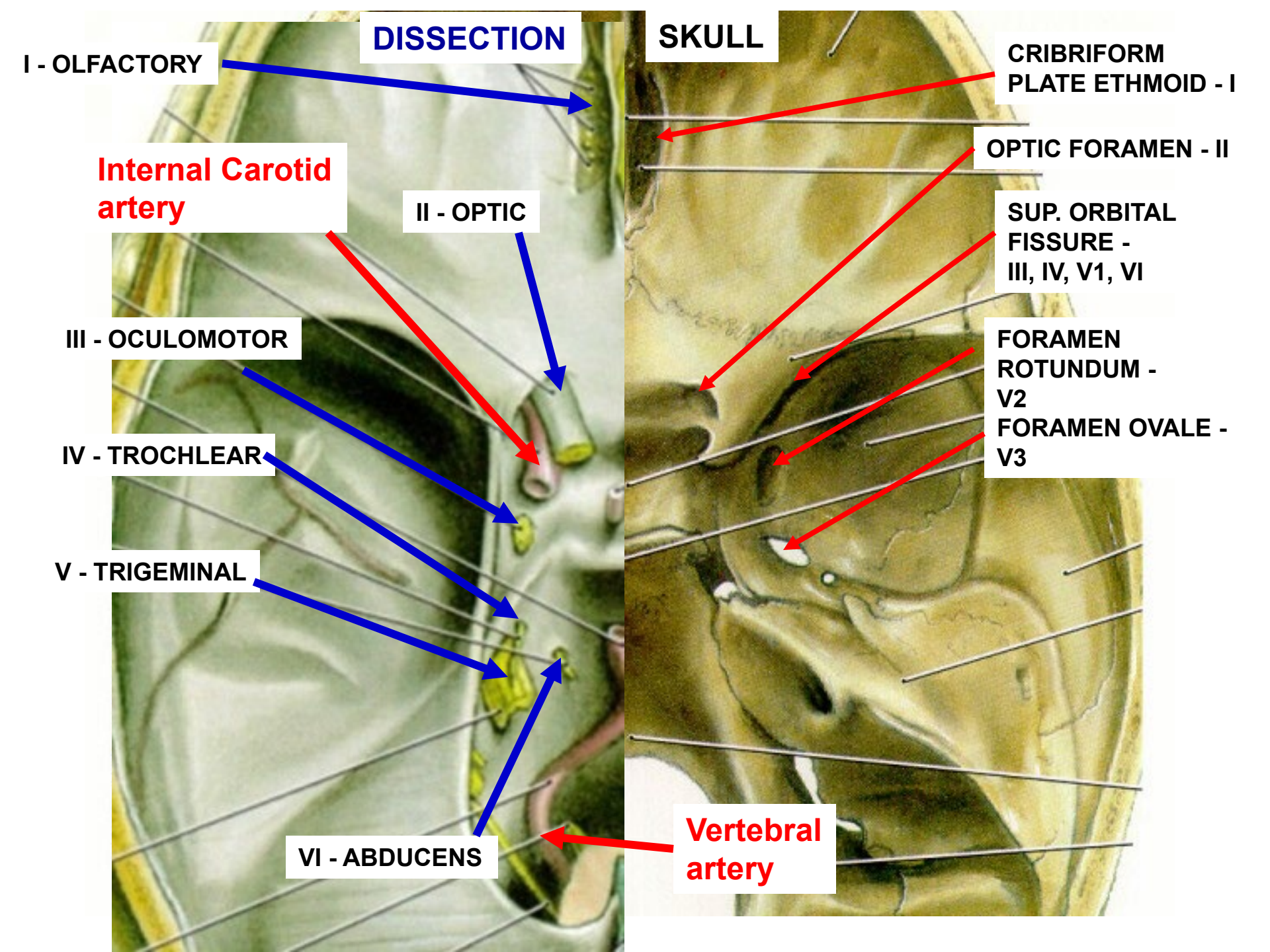

OPENING OF CAROTID CANAL - INTERNAL CAROTID ARTERY - (FORAMEN LACERUM)


INTERNAL
AUDITORY
MEATUS –
VII, VIII

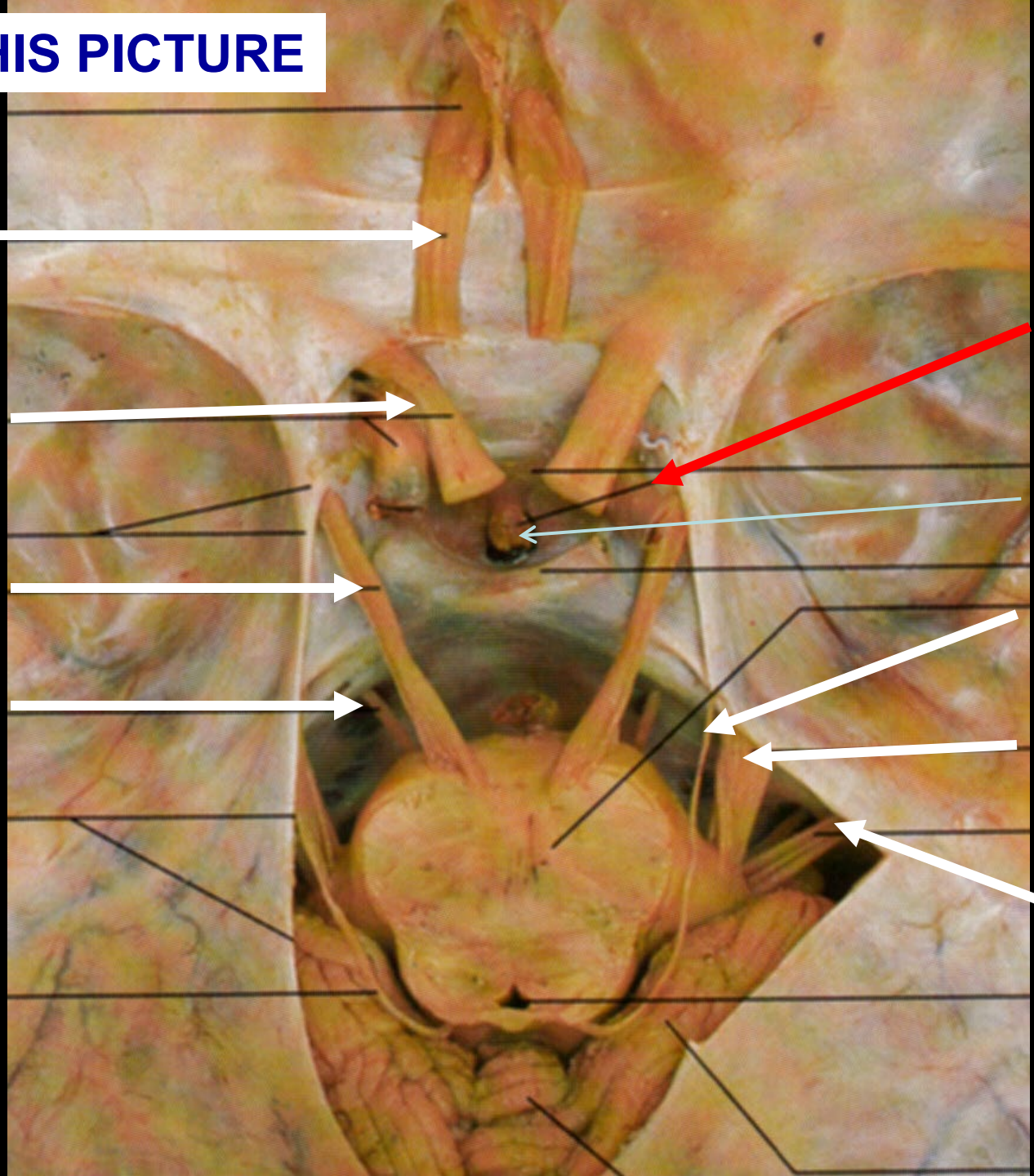

JUGULAR
FORAMEN –
CN IX, X, XI


HYPOGLOSSAL CANAL – CN XII - LMN LESION - TONGUE DEVIATES TOWARD PARALYZED SIDE WHEN PROTRUDED
FORAMEN MAGNUM - VERTEBRAL ARTERY, SPINAL CORD

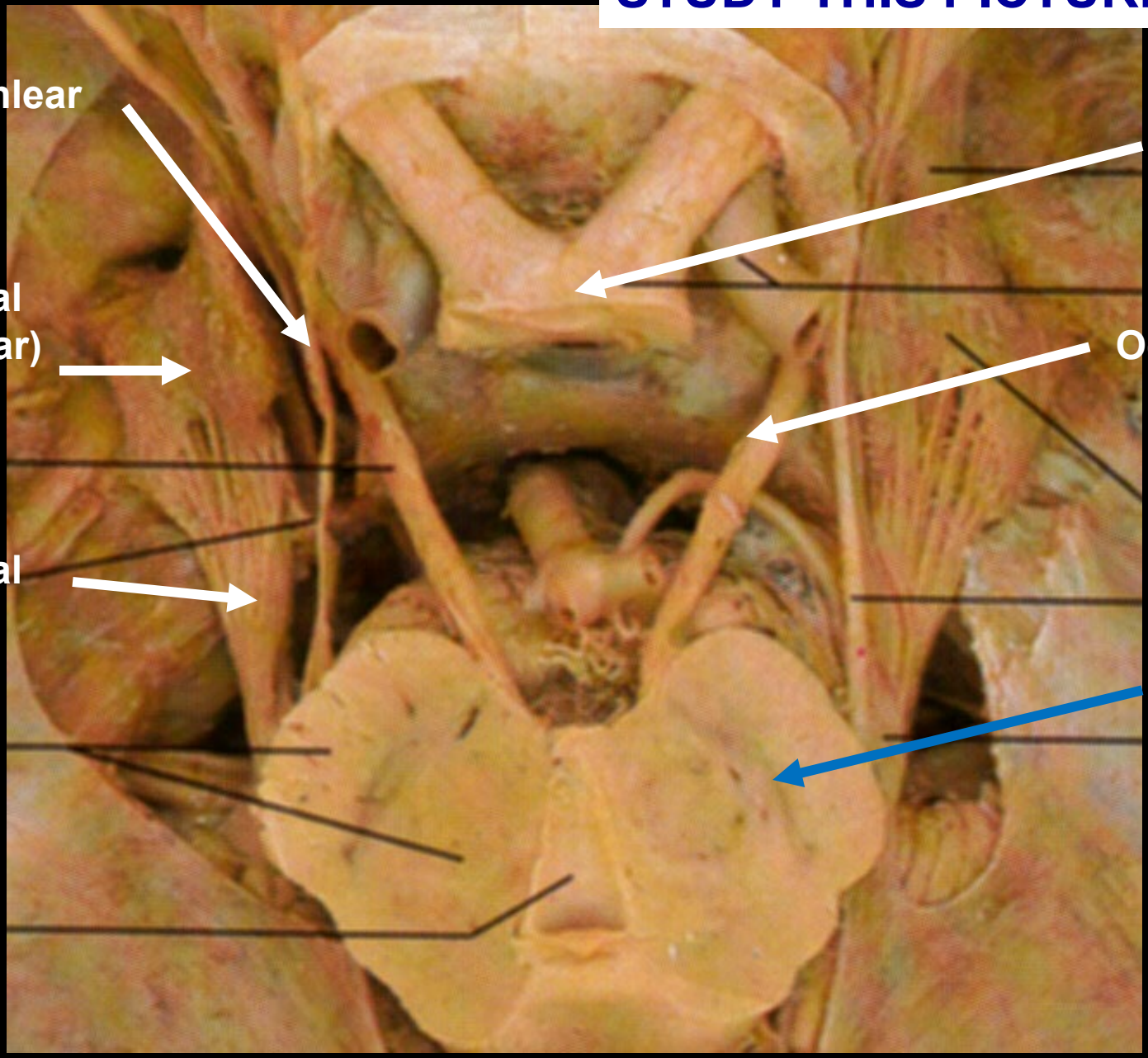

BRAINSTEM
PROSECTIONS
IDENTIFY
I
II
PITUITARY
STALK
INTERNAL CAROTID A.
V1
V2
V3
III
MIDDLE
MENINGEAL A.
IV
V
VI
VII
+VIII
VERTEBRAL A.
IX, X
+XI
XII


DISSECTION
SKULL
I - OLFACTORY
Internal Carotid artery
II - OPTIC
III - OCULOMOTOR
IV - TROCHLEAR
V - TRIGEMINAL
VI - ABDUCENS
CRIBRIFORM PLATE ETHMOID - I
OPTIC FORAMEN - II
SUP. ORBITAL FISSURE - III, IV, V1, VI
FORAMEN ROTUNDUM - V2
FORAMEN OVALE - V3
Vertebral artery

STUDY THIS PICTURE



STUDY THIS PICTURE

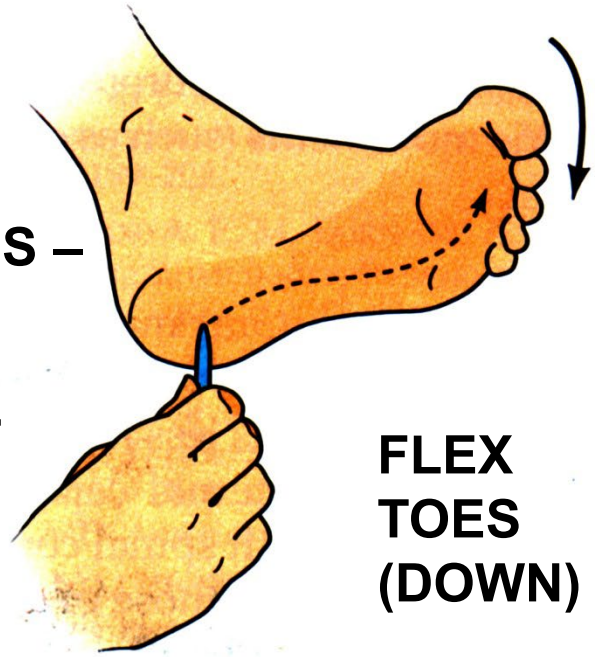


REFLEXES: UPPER MOTOR NEURON (CORTICOSPINAL TRACT) LESION

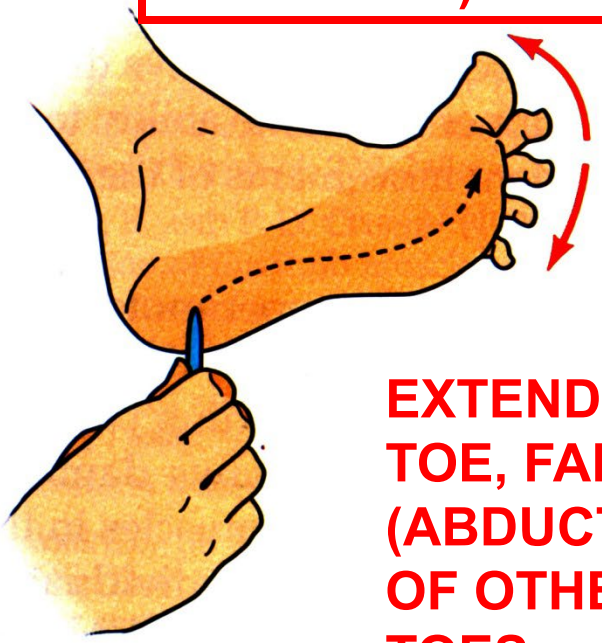
NORMAL RESPONSE

BABINSKI SIGN – (EXTENSOR PLANTAR RESPONSE)

STIMULUS – TO SKIN OF SOLE OF FOOT



FLEX TOES (DOWN)



EXTEND BIG TOE, FANNING (ABDUCTION) OF OTHER TOES

Babinski sign - seen after **Upper Motor neuron lesion**
-direction of movement **changes from flexing toes to extending and fanning (abducting) toes - (normal in neonates)**

PLANTAR REFLEX: ABNORMAL, (POSITIVE) BABINSKI SIGN ON ONE SIDE [used by permission of Paul D. Larsen, M.D., University of Nebraska Medical Center; http://library.med.utah.edu/neurologicexam]

1. PUPILLARY LIGHT REFLEX - II TO III

AFFERENT ARM OF REFLEX

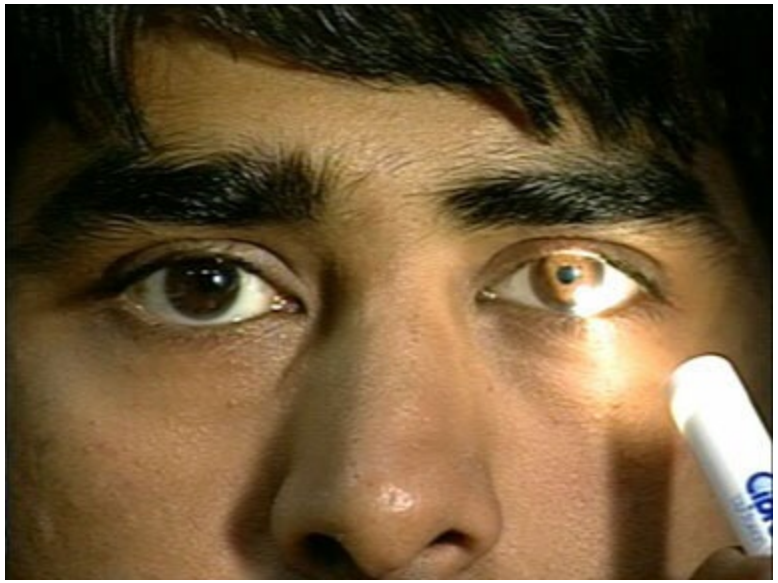
SENSORY STIMULUS

LIGHT IN EYE

EFFERENT ARM OF REFLEX

MOTOR RESPONSE

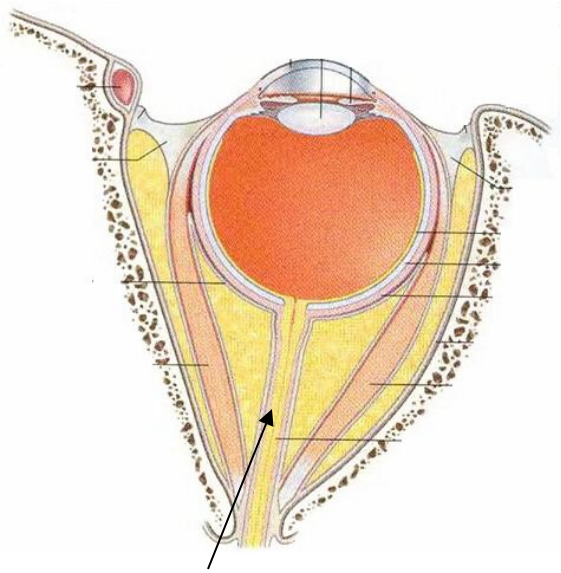
CONSTRICT PUPIL



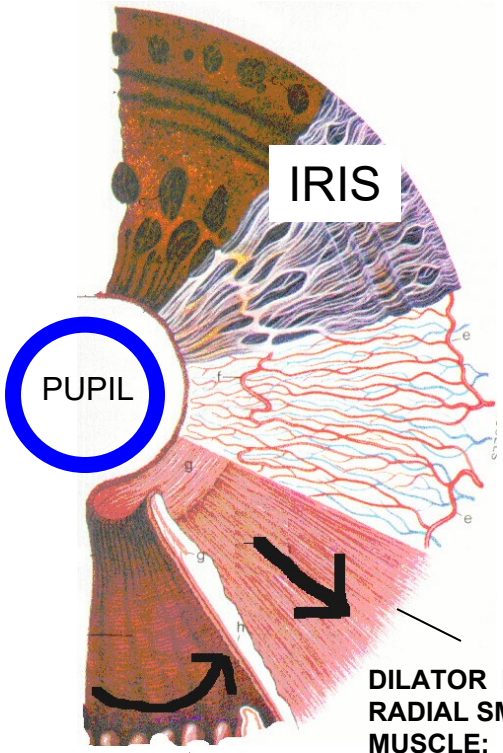
PUPILLARY LIGHT REFLEX

CN II - OPTIC NERVE - DETECTS LIGHT

CN III - OCULOMOTOR - parasympathetics from Ciliary Ganglion in Short Ciliary nerves

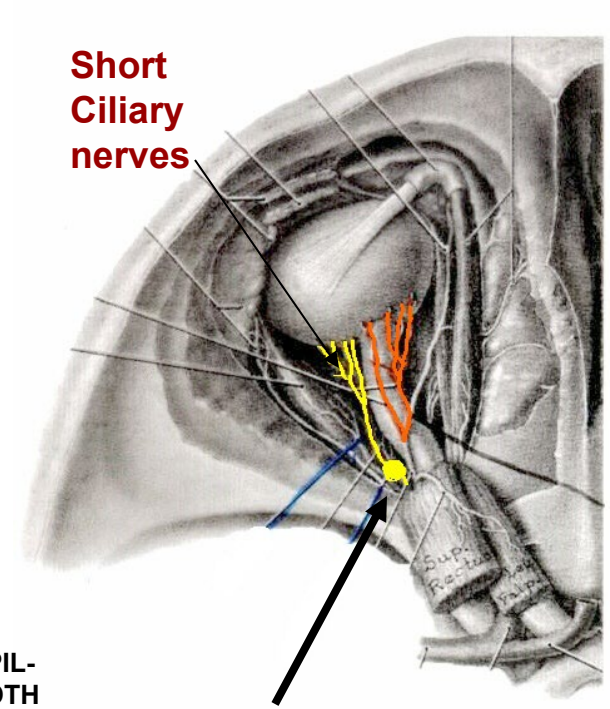


OPTIC NERVE - CN II VISION



DILATOR PUPIL- RADIAL SMOOTH MUSCLE; SYMPATHETICS

CONSTRICTOR PUPIL- CIRCULAR SMOOTH MUSCLE; PARASYMPATHETICS - CN III



Ciliary Ganglion of CN III

PUPILLARY LIGHT REFLEX

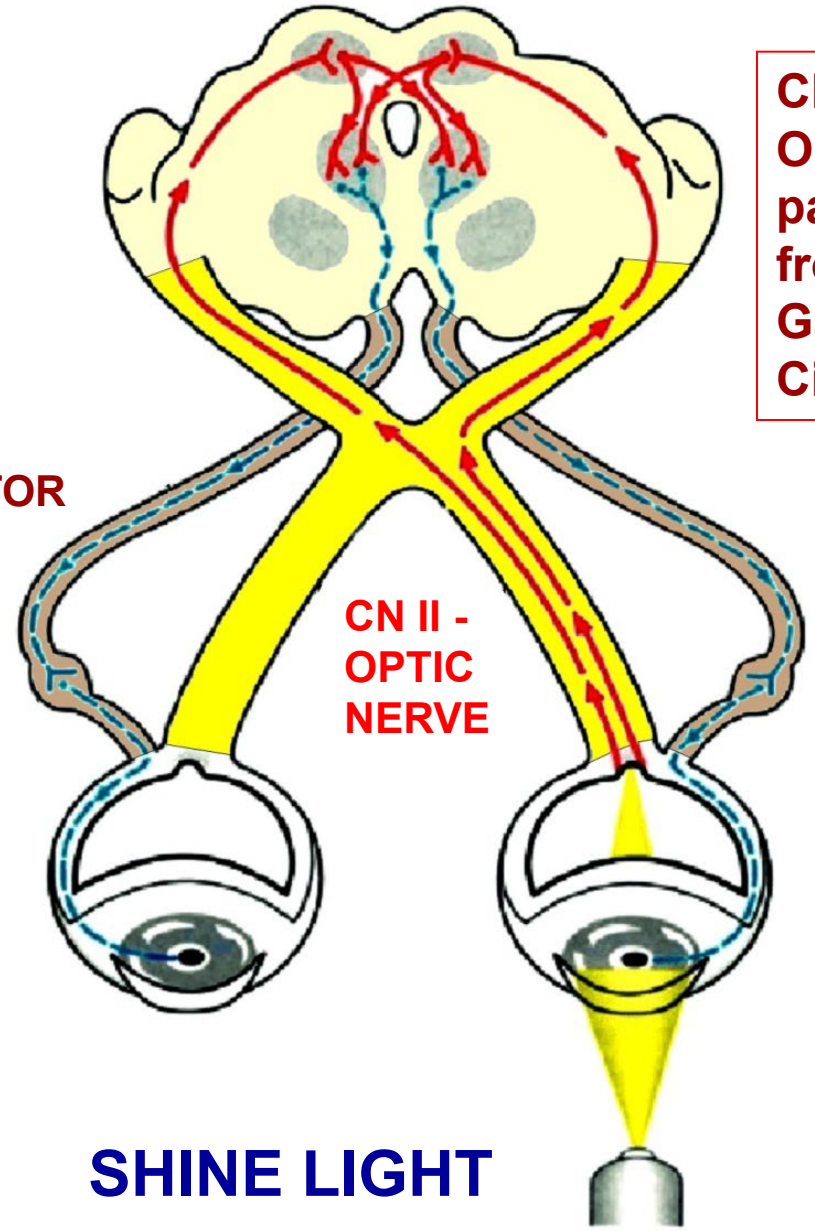
CN II - OPTIC NERVE - DETECTS LIGHT

CN III - OCULOMOTOR - parasympathetics from Ciliary Ganglion in Short Ciliary nerves

CN III - OCULOMOTOR

CN III - OCULOMOTOR

CN II - OPTIC NERVE



CONSENSUAL REFLEX – PUPIL CONSTRICTS IN OPPOSITE EYE

DIRECT REFLEX – PUPIL CONSTRICTS IN SAME EYE

SHINE LIGHT

2. CORNEAL REFLEX - V TO VII

AFFERENT ARM OF REFLEX

SENSORY STIMULUS

TOUCH CORNEA

TRIGEMINAL - V1 - LONG CILIARY NERVES TO CORNEA

EFFERENT ARM OF REFLEX

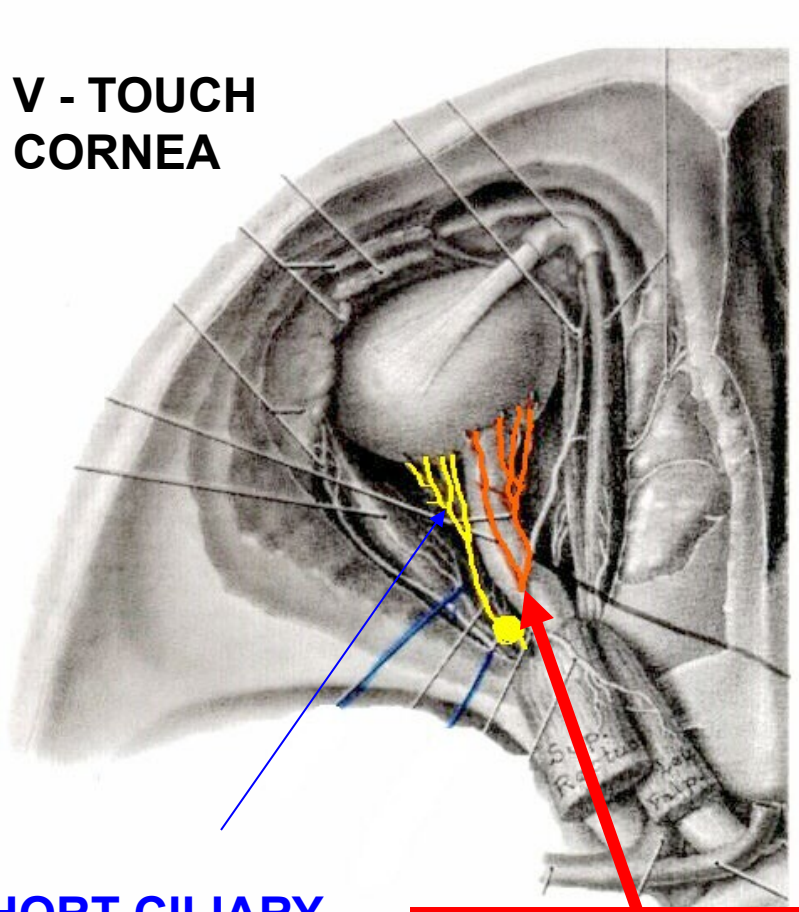
MOTOR RESPONSE

CLOSE EYELID

FACIAL - VII - MOTOR TO ORBICULARIS OCULI (SVE)

CORNEAL REFLEX - V to VII

V - TOUCH CORNEA



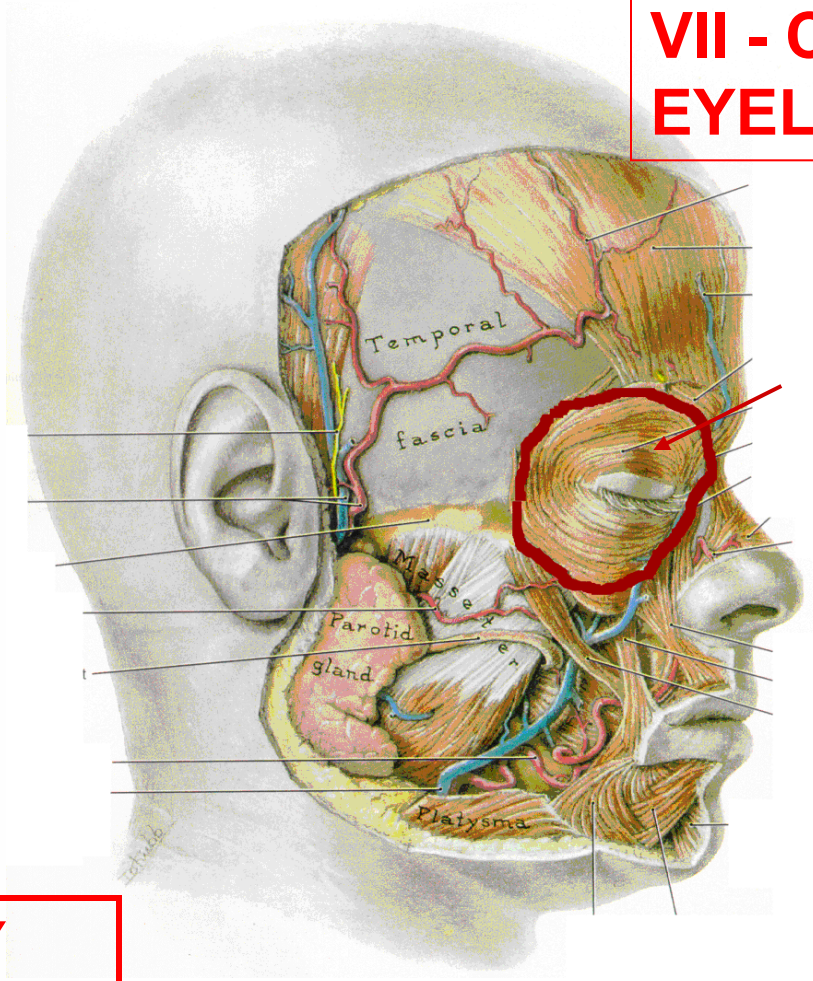
SHORT CILIARY NERVES (III),

CILIARY GANGLION

PARASYMPATHETIC

LONG CILIARY NERVES (V1) - SOMATIC SENSORY TO CORNEA

VII - CLOSE EYELID



ORBICU-LARIS OCULI M.

- Palpebral part - Close eyelids
- Orbital part - Buries eyelids, Ex. sandstorm

BRANCHIOMOTOR - VII

3. GAG REFLEX - IX to X

AFFERENT ARM OF REFLEX

SENSORY STIMULUS

TOUCH ORO-PHARYNX

EFFERENT ARM OF REFLEX

MOTOR RESPONSE

PATIENT GAGS - CONTRACT PHARYNGEAL MUSCLES

GAG REFLEX

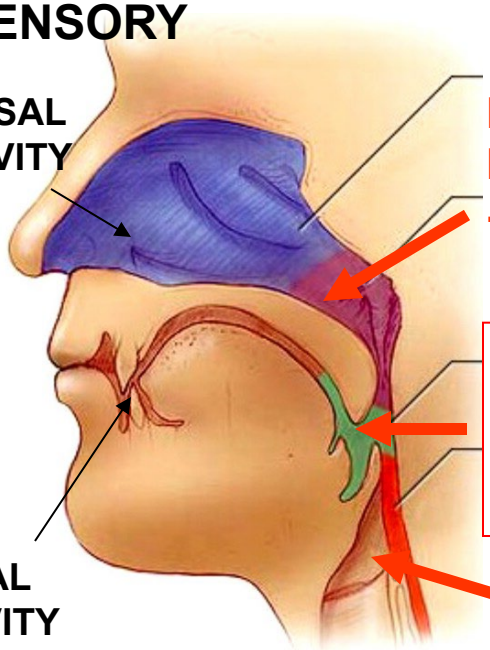
CRANIAL NERVES LECTURE

IX - SENSORY INNERVATION TO OROPHARYNX

All Pharynx is Visceral Sensory In 3 Cranial Nerves

SOMATIC SENSORY

VISCERAL SENSORY

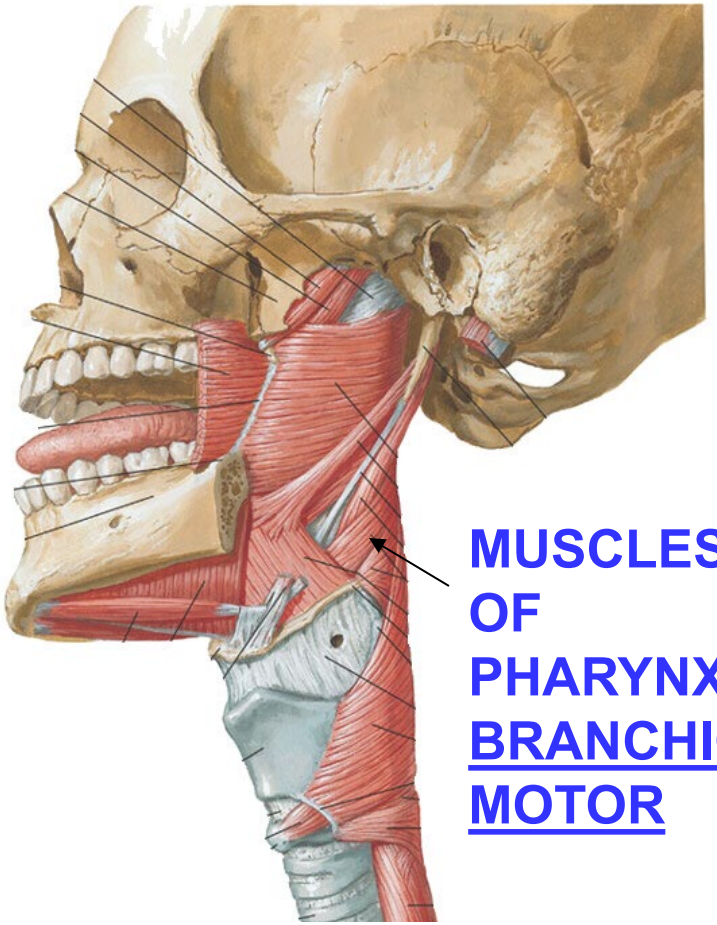


NASO-PHARYNX - VII

ORO-PHARYNX - IX

LARYNGO-PHARYNX - X

X - INNERVATES ALL MUSCLES OF PHARYNX (except Stylopharyngeus)

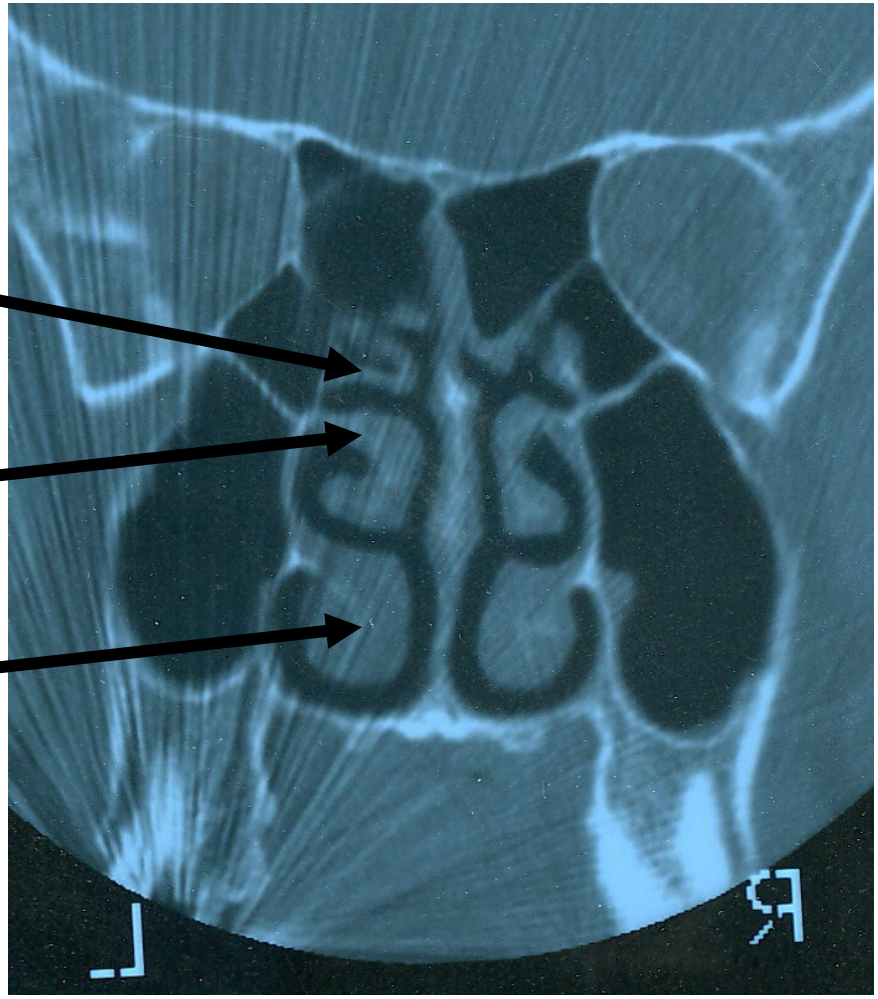


MUSCLES OF PHARYNX - BRANCHIO-MOTOR

IX AND X - LEAVE MEDULLA, EXIT BY JUGULAR FORAMEN - CAN DIAGNOSE DAMAGE IN BRAINSTEM BY TESTING REFLEXES

NASAL CAVITY

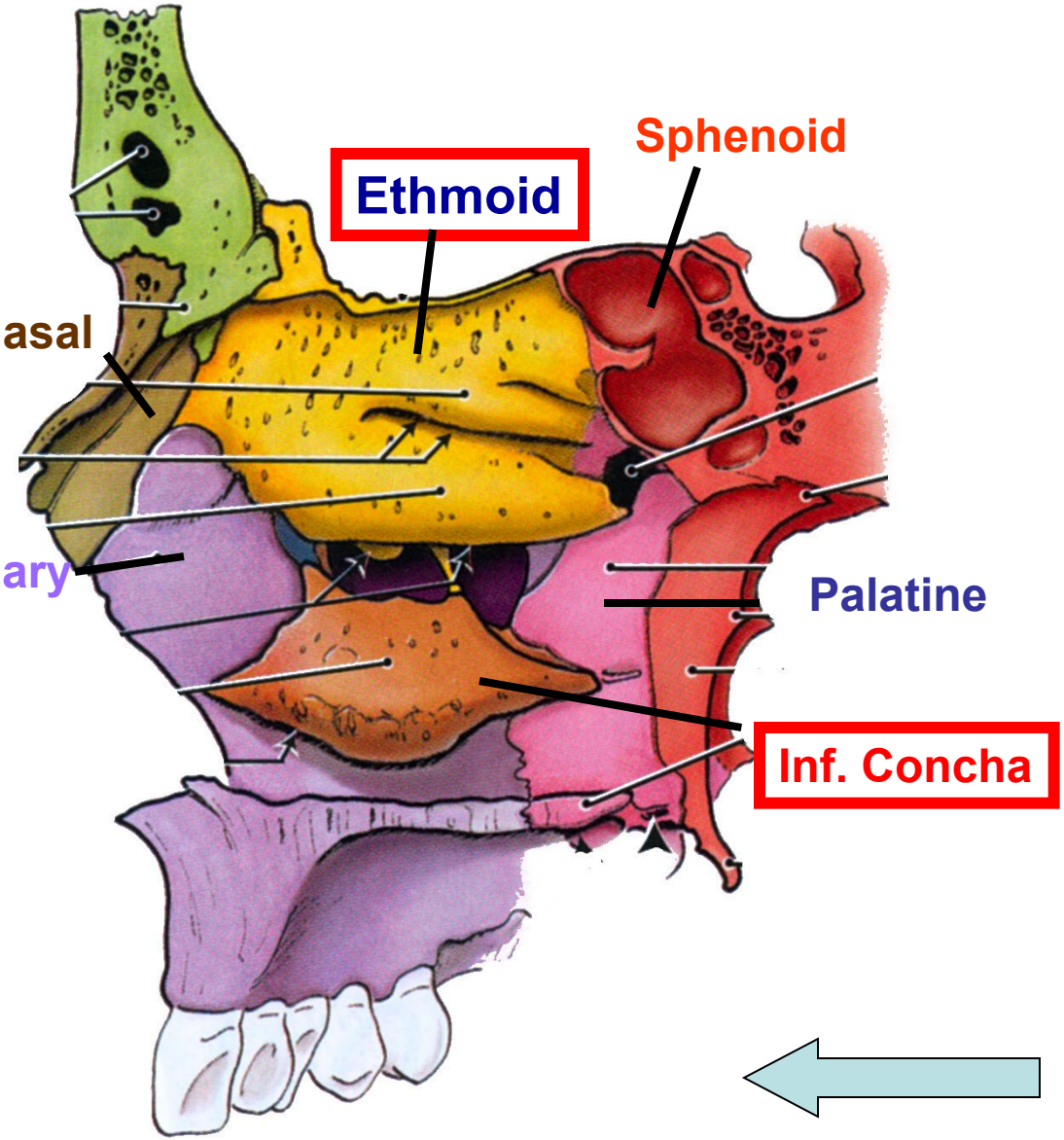
1) Superior Concha - Ethmoid
2) Middle Concha - Ethmoid
3) Inferior Concha - separate bone



NASAL CAVITY

Lateral Wall

1) Nasal Bone
2) Maxillary
3) Inferior Concha
4) Palatine
5) Ethmoid
6) Sphenoid



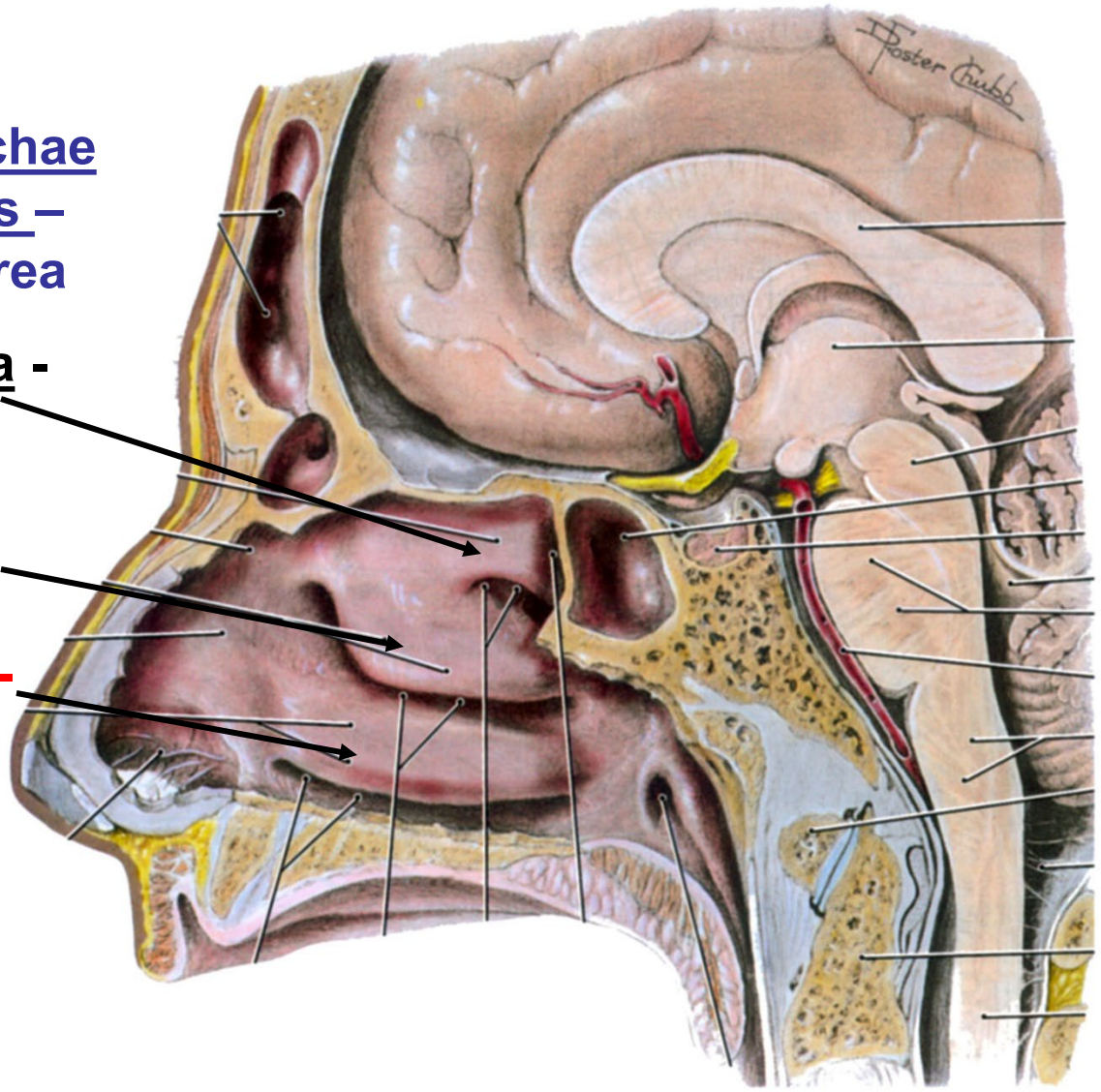
C. LATERAL WALL OF NASAL CAVITY

Projections = Conchae (shell) or turbinates – increase surface area

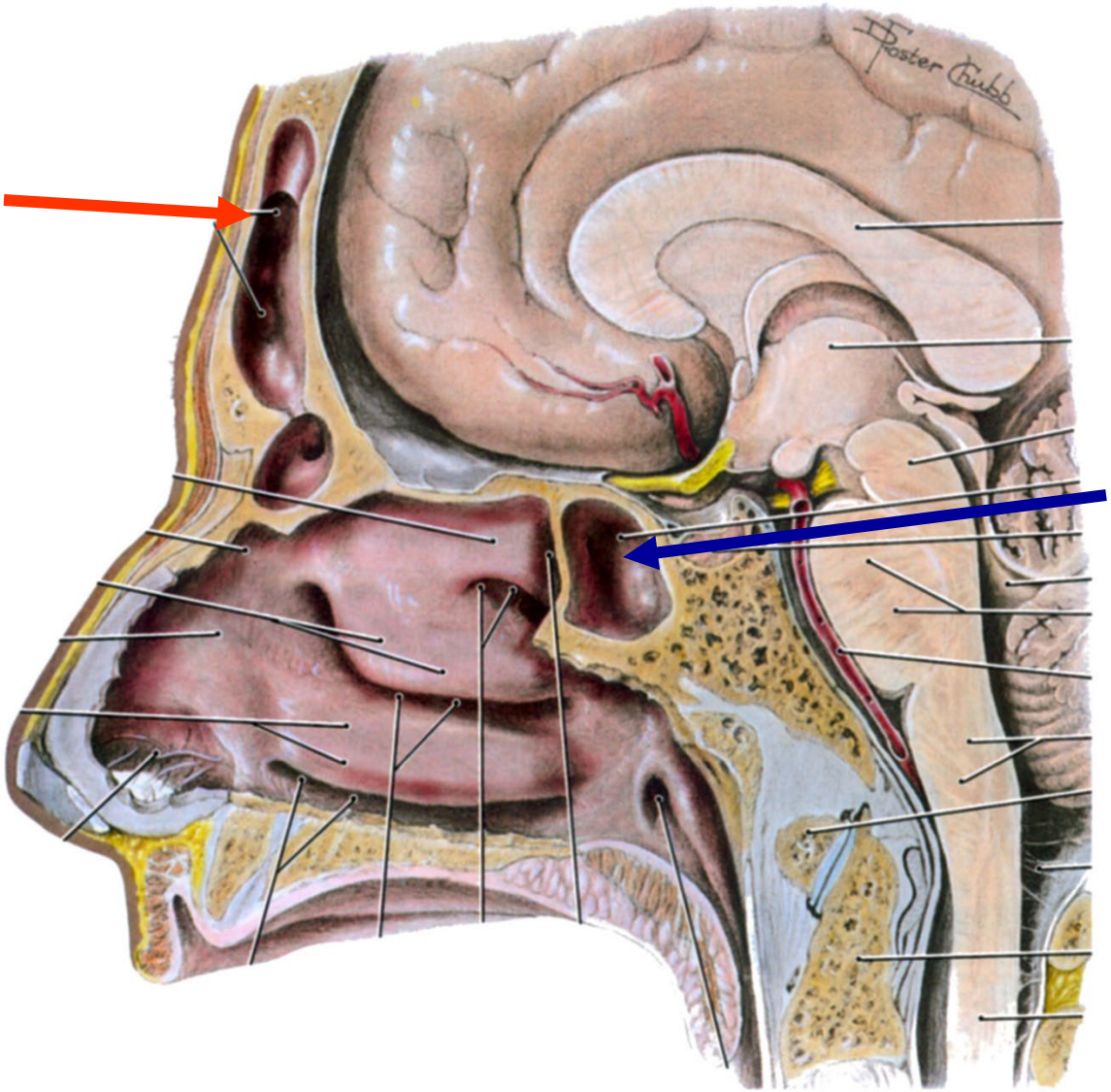
1) **Superior Concha** - Ethmoid

2) **Middle Concha** - Ethmoid

3) **Inferior Concha** - separate bone

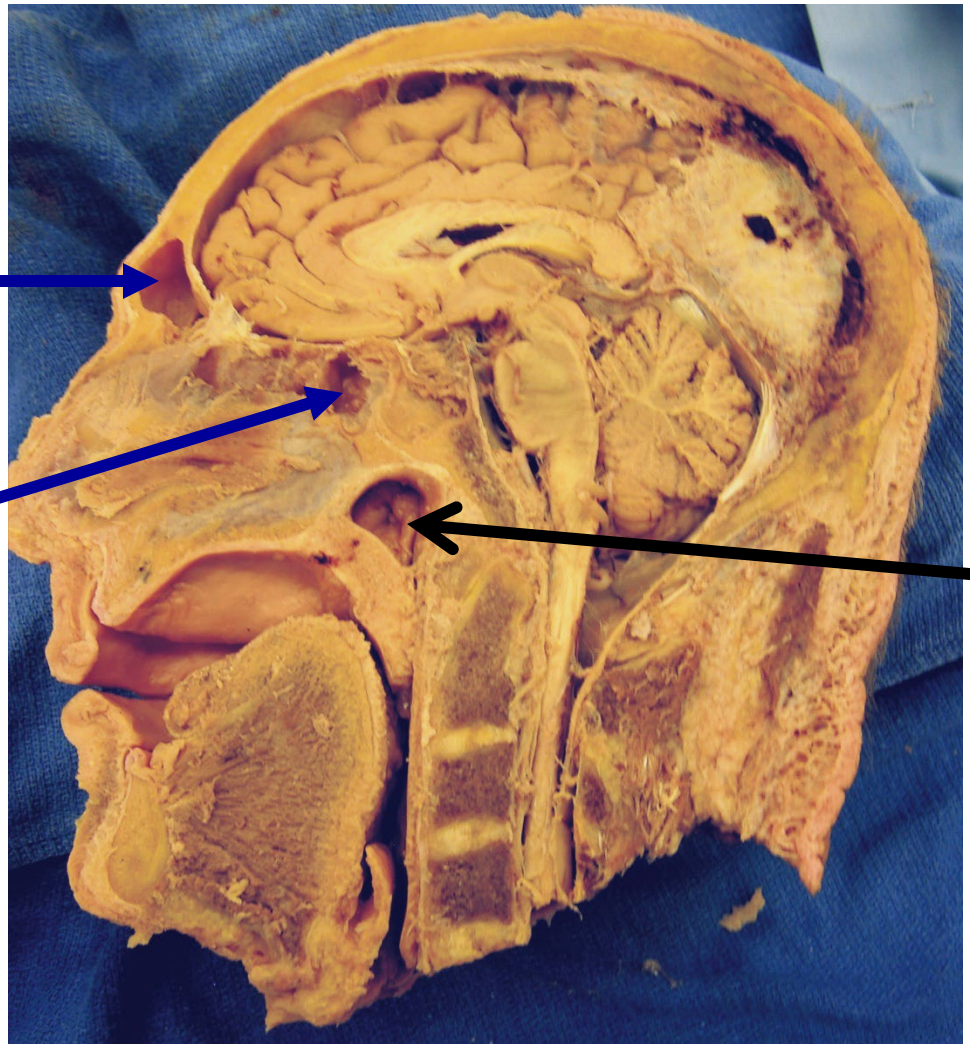


PARANASAL AIR SINUSES

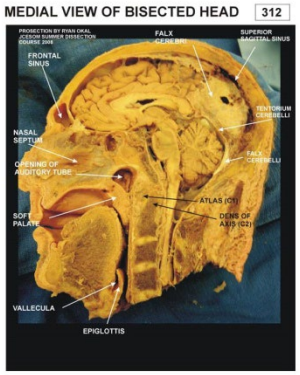


FRONTAL SINUS

SPHENOID SINUS



312



Note: Opening of Auditory (Eustachian) Tube