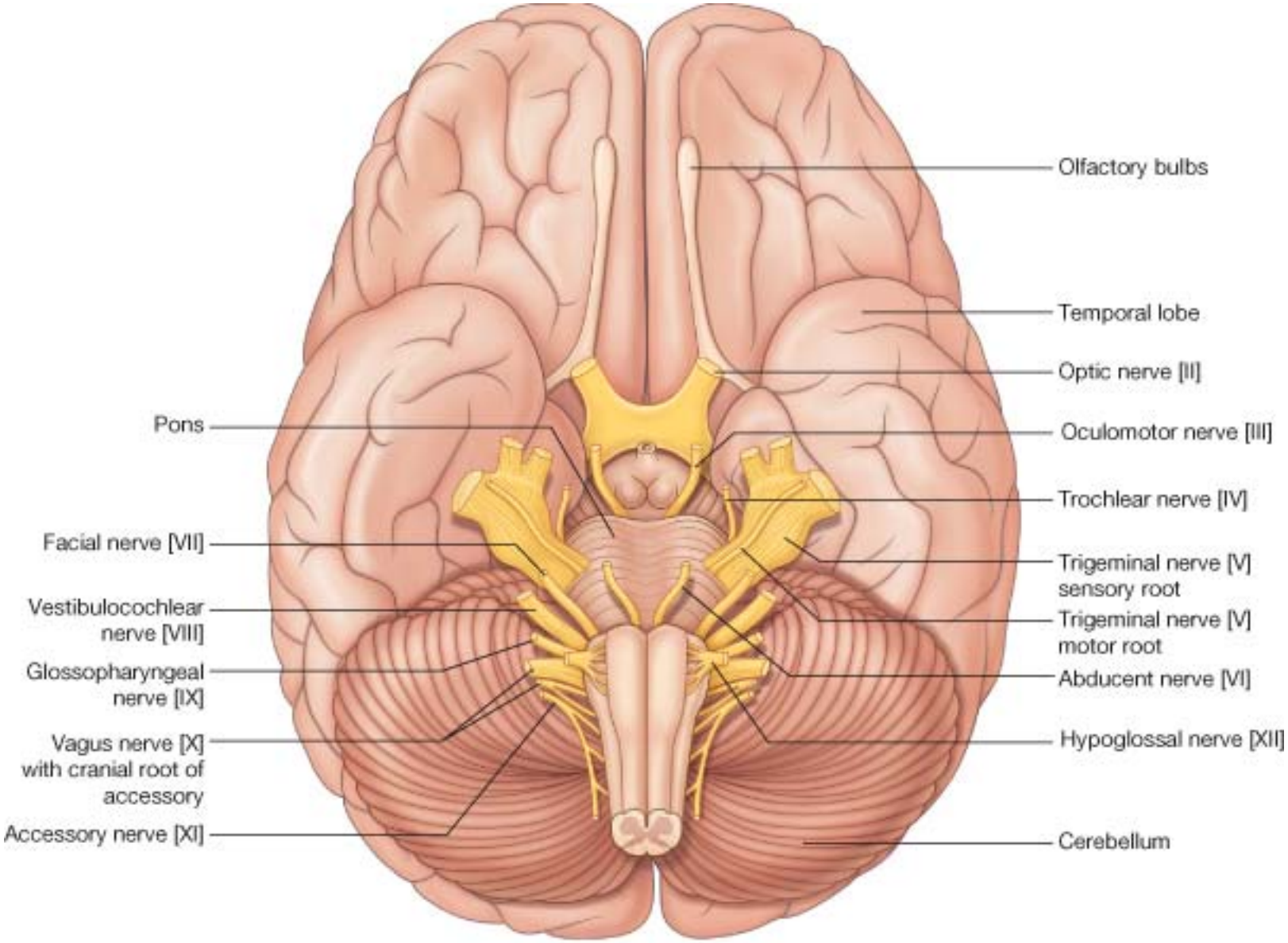
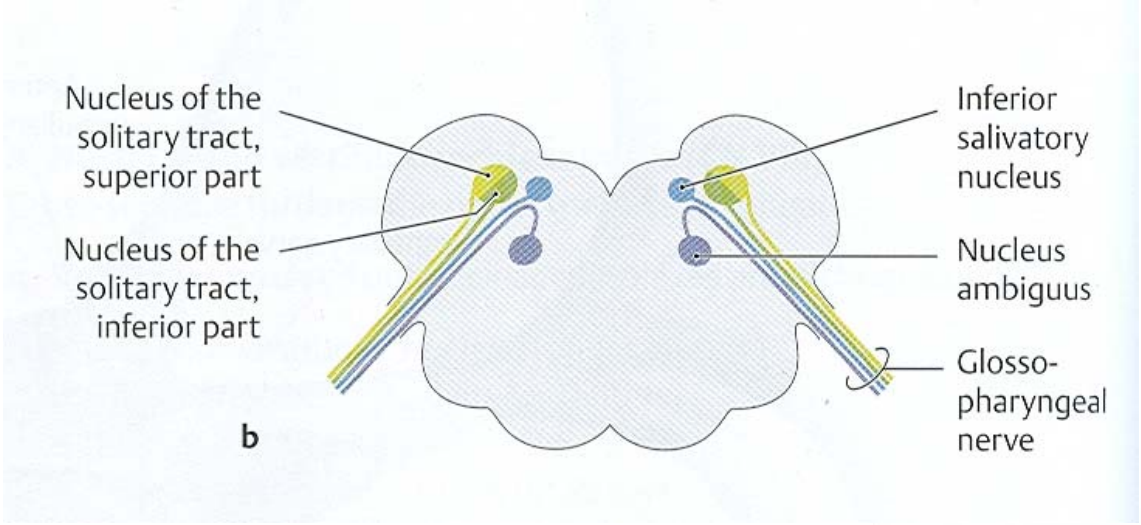

Olfactory bulbs
Temporal lobe
Optic nerve [II]
Pons
Oculomotor nerve [III]
Trochlear nerve [IV]
Facial nerve [VII]
Trigeminal nerve [V] sensory root
Vestibulocochlear nerve [VIII]
Trigeminal nerve [V] motor root
Glossopharyngeal nerve [IX]
Abducent nerve [VI]
Vagus nerve [X] with cranial root of accessory
Hypoglossal nerve [XII]
Accessory nerve [XI]
Cerebellum



Origin: from nuclei in Pons and medulla

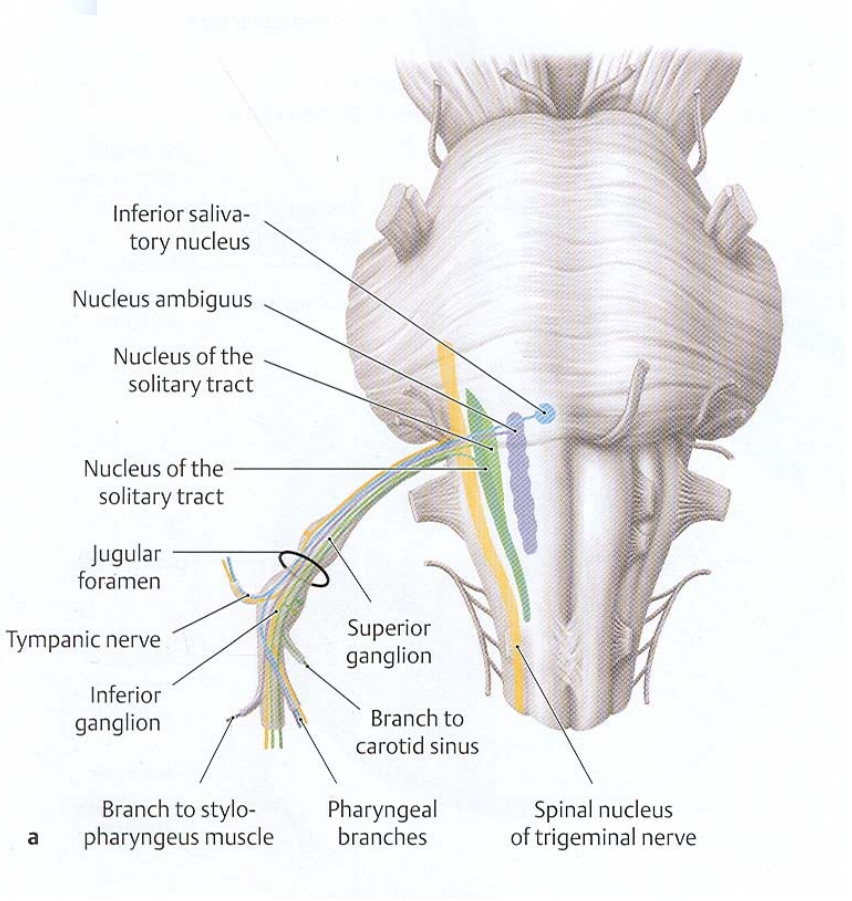
No separate nucleus

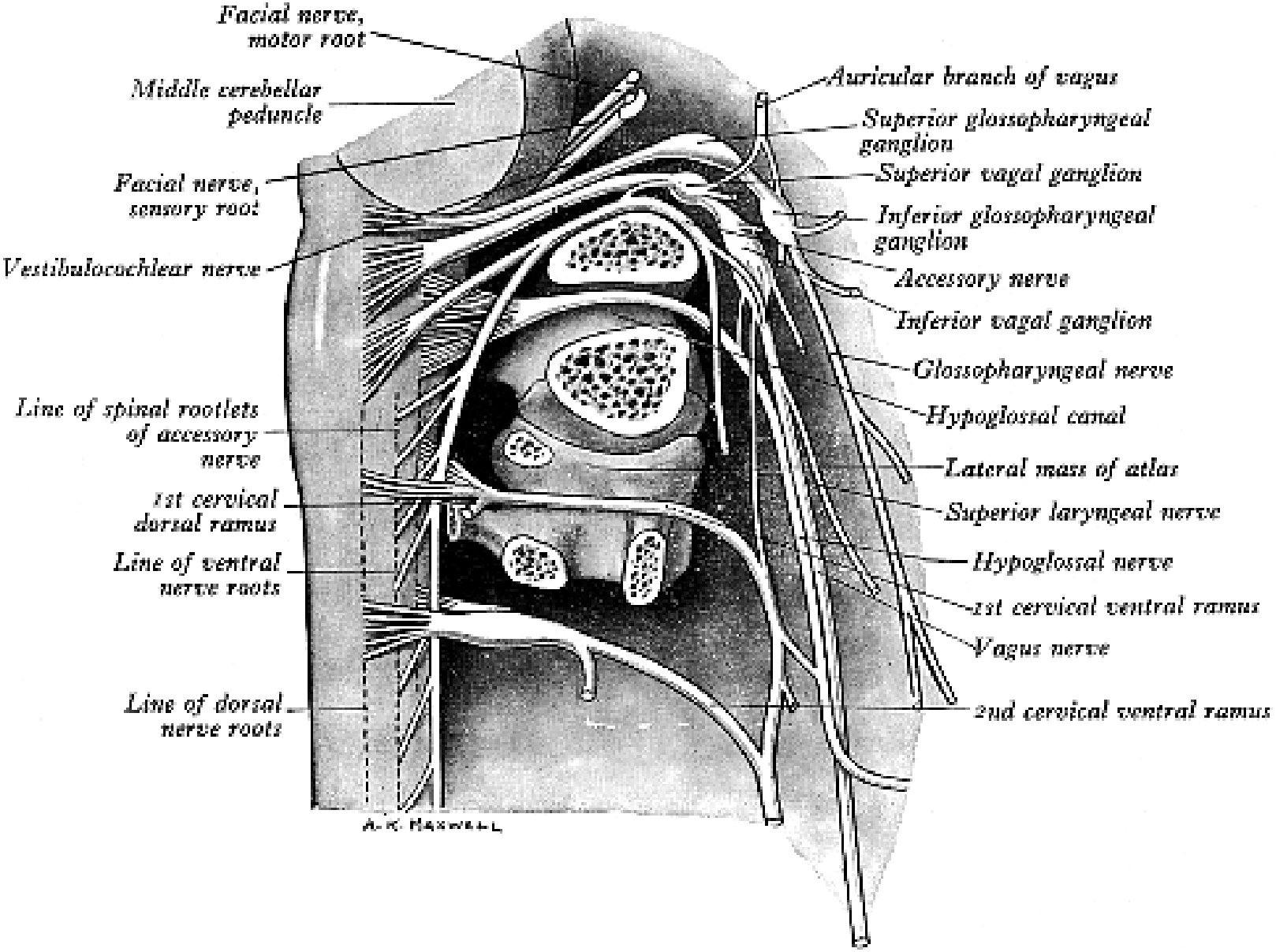
Fibres terminate in/emerge from: Nuclei of Vth nerve

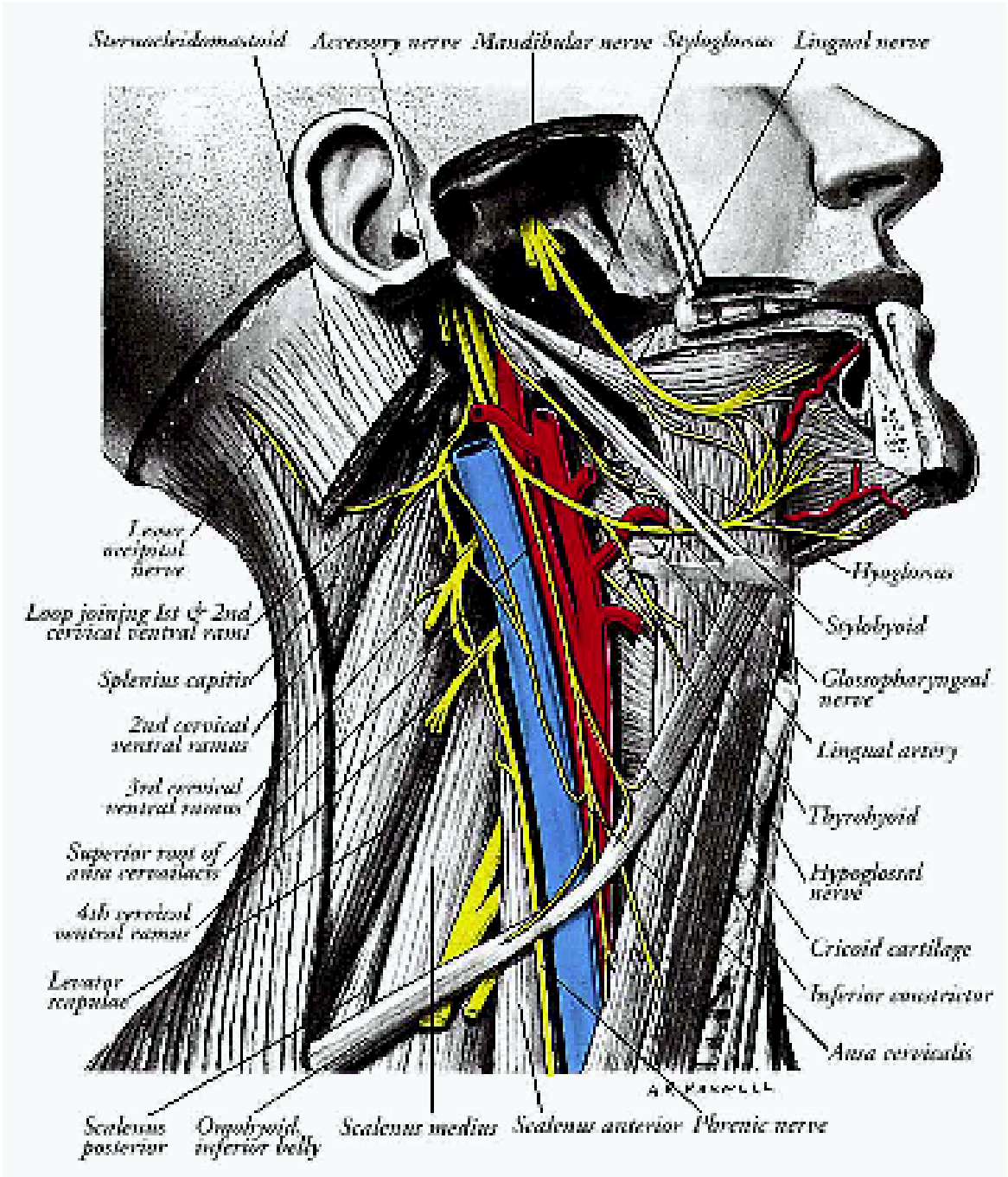
N. of tractus solitarius

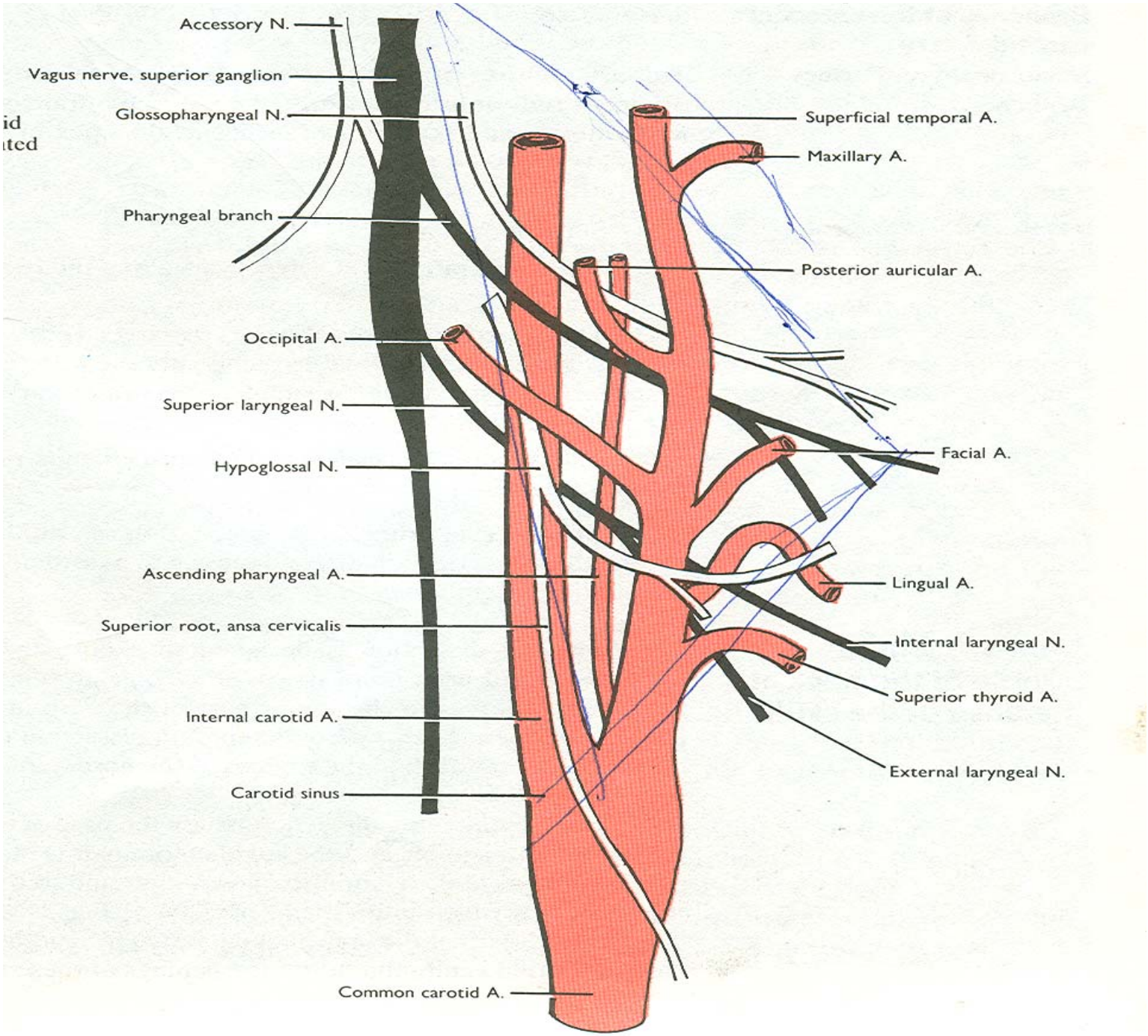
N. ambiguus

Inf. Salivatory nucleus




Facial nerve, motor root
Middle cerebellar peduncle
Facial nerve, sensory root
Vestibulocochlear nerve
Line of spinal rootlets of accessory nerve
1st cervical dorsal ramus
Line of ventral nerve roots
Line of dorsal nerve roots
Auricular branch of vagus
Superior glossopharyngeal ganglion
Superior vagal ganglion
Inferior glossopharyngeal ganglion
Accessory nerve
Inferior vagal ganglion
Glossopharyngeal nerve
Hypoglossal canal
Lateral mass of atlas
Superior laryngeal nerve
Hypoglossal nerve
1st cervical ventral ramus
Vagus nerve
2nd cervical ventral ramus
A. K. MAXWELL


Sternocleidomastoid
Accessory nerve
Mandibular nerve
Styloglossus
Lingual nerve
Lesser occipital nerve
Loop joining 1st & 2nd cervical ventral rami
Splenius capitis
2nd cervical ventral ramus
3rd cervical ventral ramus
Superior root of ansa cervicalis
4th cervical ventral ramus
Levator scapulae
Hyoglossus
Stylohyoid
Glossopharyngeal nerve
Lingual artery
Thyrohyoid
Hypoglossal nerve
Cricoid cartilage
Inferior constrictor
Ansa cervicalis
Scalenus posterior
Omohyoid, inferior belly
Scalenus medius
Scalenus anterior
Phrenic nerve


Accessory N.
Vagus nerve, superior ganglion
Glossopharyngeal N.
Pharyngeal branch
Occipital A.
Superior laryngeal N.
Hypoglossal N.
Ascending pharyngeal A.
Superior root, ansa cervicalis
Internal carotid A.
Carotid sinus
Common carotid A.
Superficial temporal A.
Maxillary A.
Posterior auricular A.
Facial A.
Lingual A.
Internal laryngeal N.
Superior thyroid A.
External laryngeal N.

Ganglia

Superior: In Jugular foramen

small

no branches

Inferior: Convey gustatory fibres & gen. sensory for oropharynx

connected to superior cervical symp. Ganglion

Communication with: Sympathetic trunk

vagus nerve

Facial nerve

IXth nerve-functional components

- i) Sensory from pharynx/tongue –
- GVA
- ii) Taste -
- Br A
- iii) General sensation from ear –
- GSA
- iv) Parasympathetic to otic
- ganglion -
- GVE
- v) Motor to 3rd arch -
- Br E

Supplies:

1. Motor- stylopharyngeus
2. Parasymp. Secretomotor-

   Parotid gland
3. Sensory- Tympanic cavity

   Pharyngotympanic tube

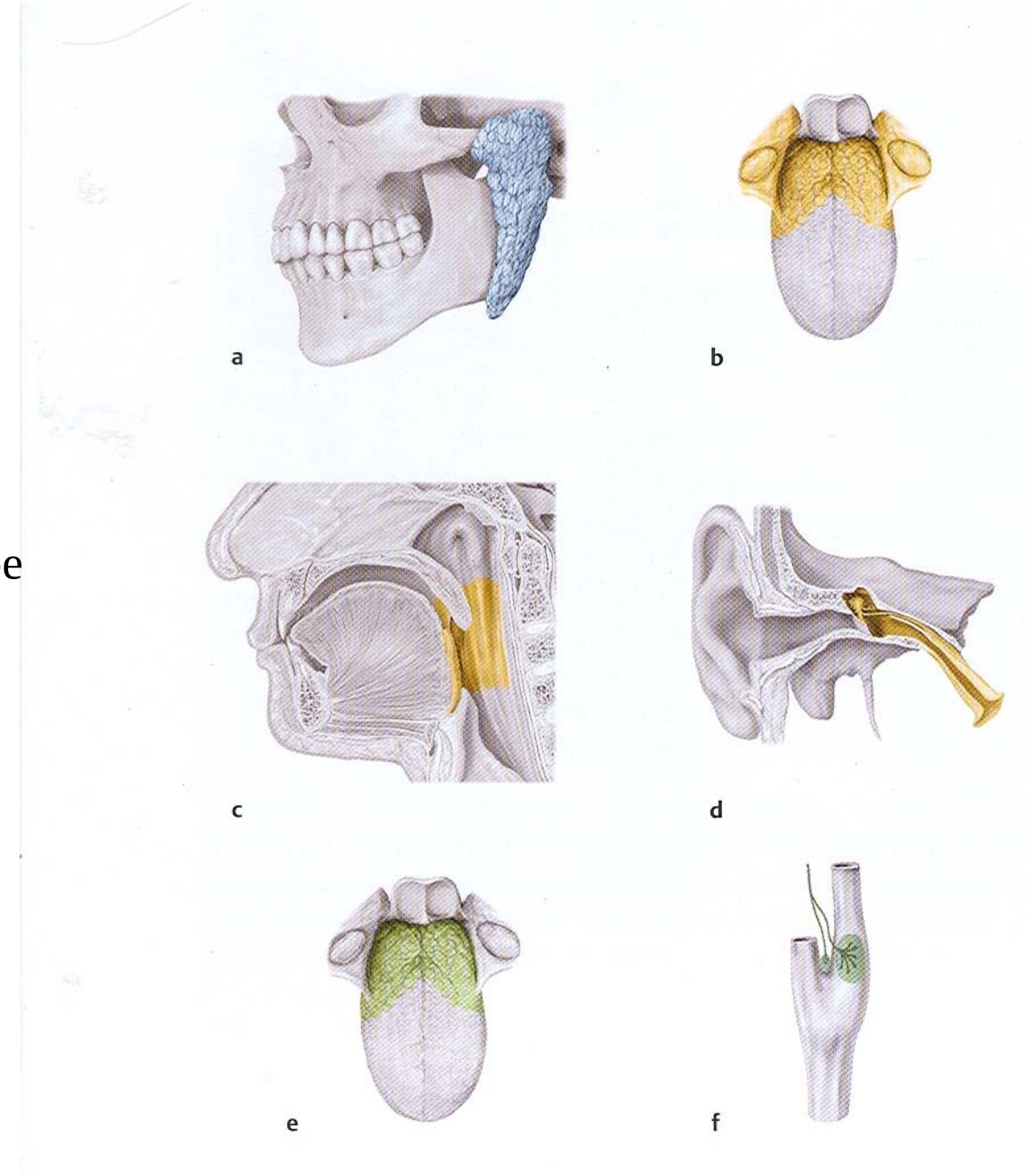
   Fauces, tonsils, Uvula

   Nasopharynx

   Post. 1/3 of tongue

   Carotid body, sinus
4. Special taste fibres-

   Post. 1/3 of tongue



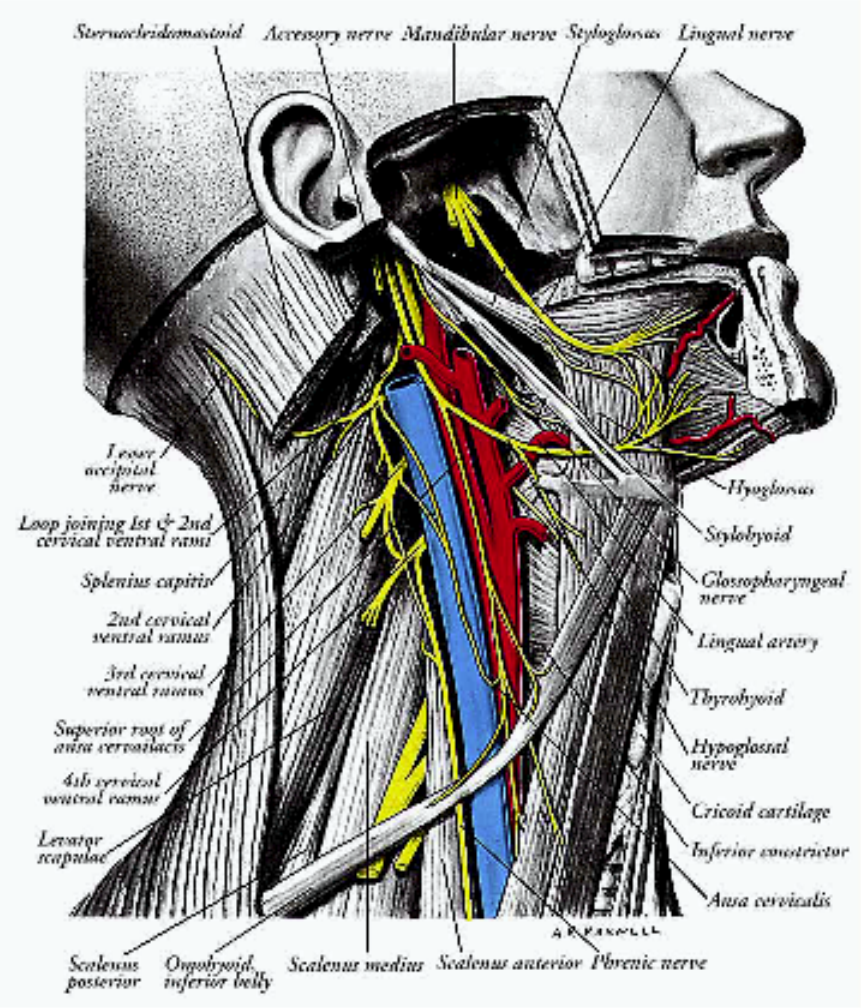
IXth nerve-course

- Exit from jugular foramen, ant to X & XI
- In neck between IJV and ICA

  then ant to ICA, deep to styloid process

  reach post. border of stylopharyngeus

  passes between sup. and middle constrictor

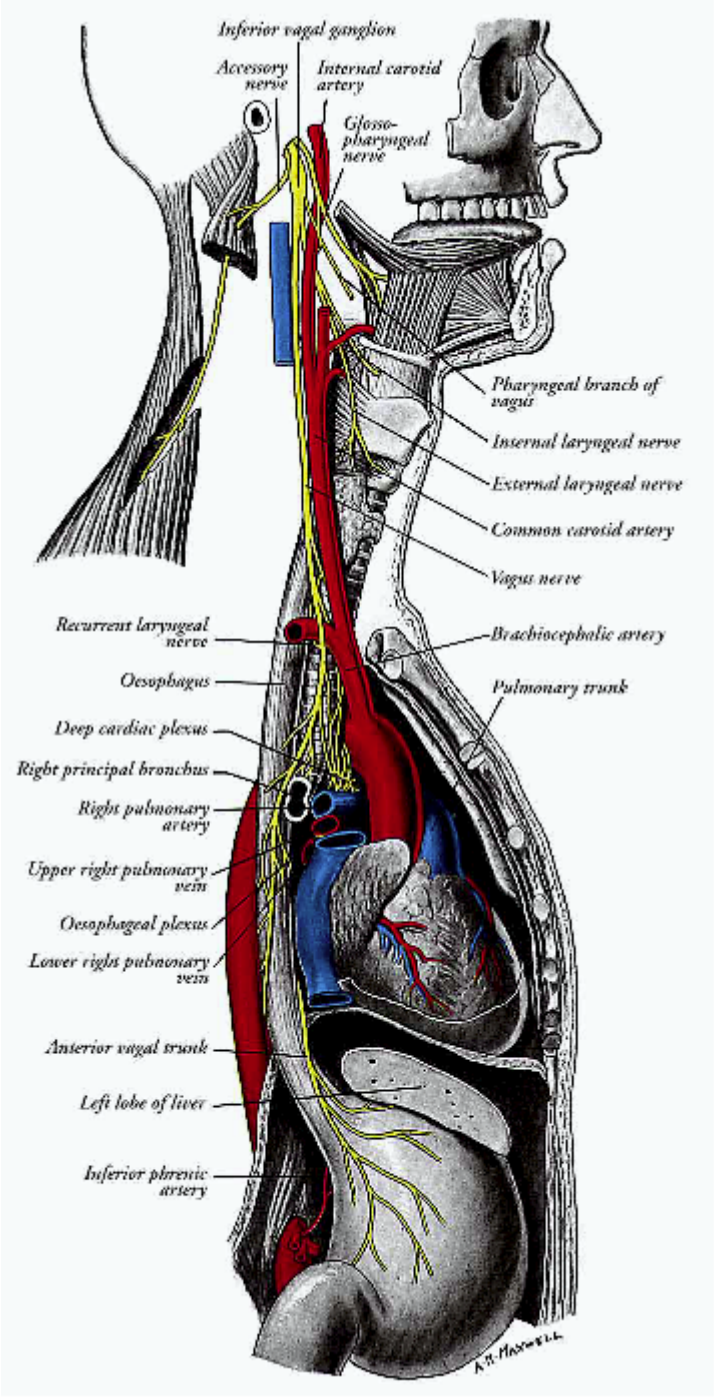


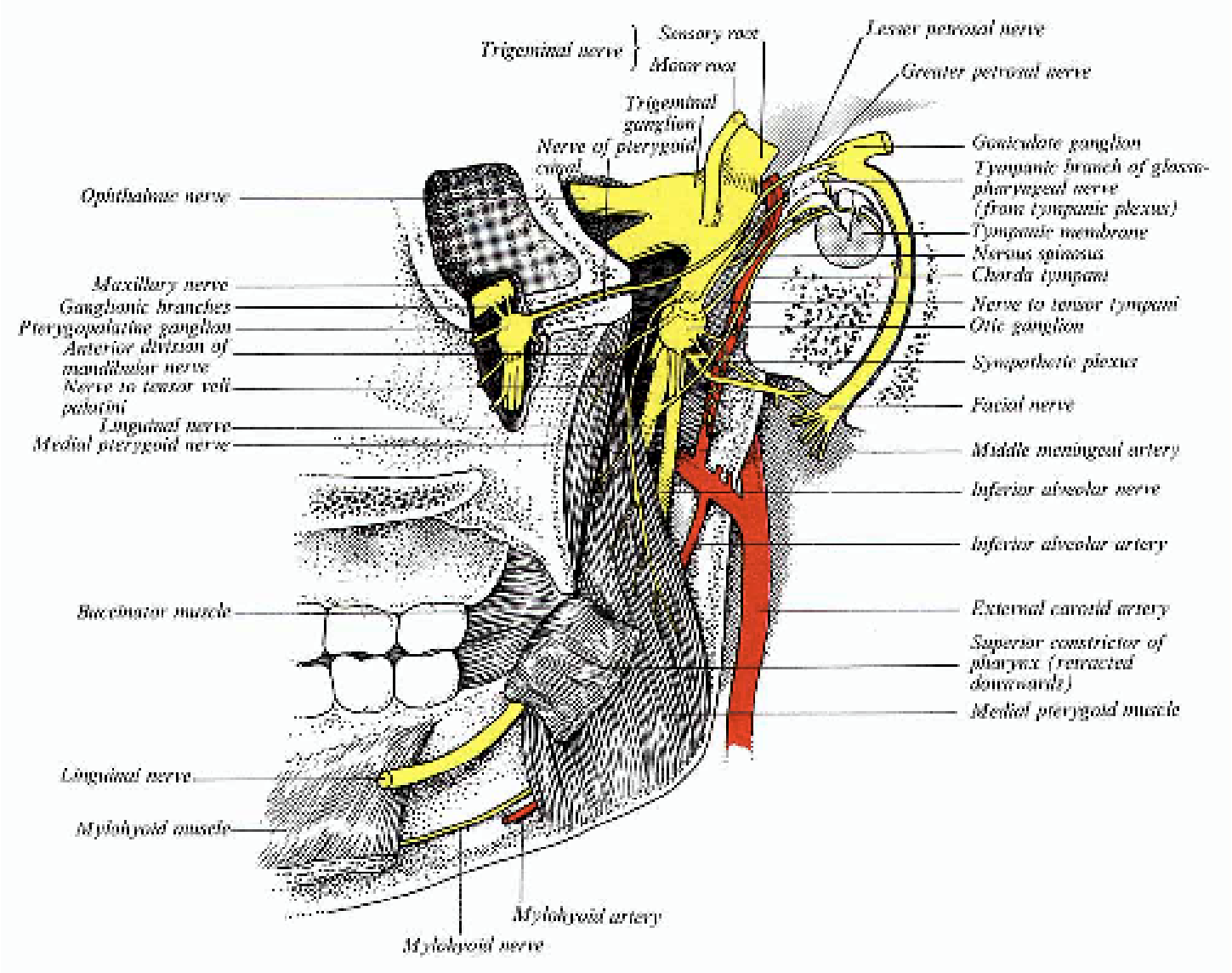
IX nerve-Branches

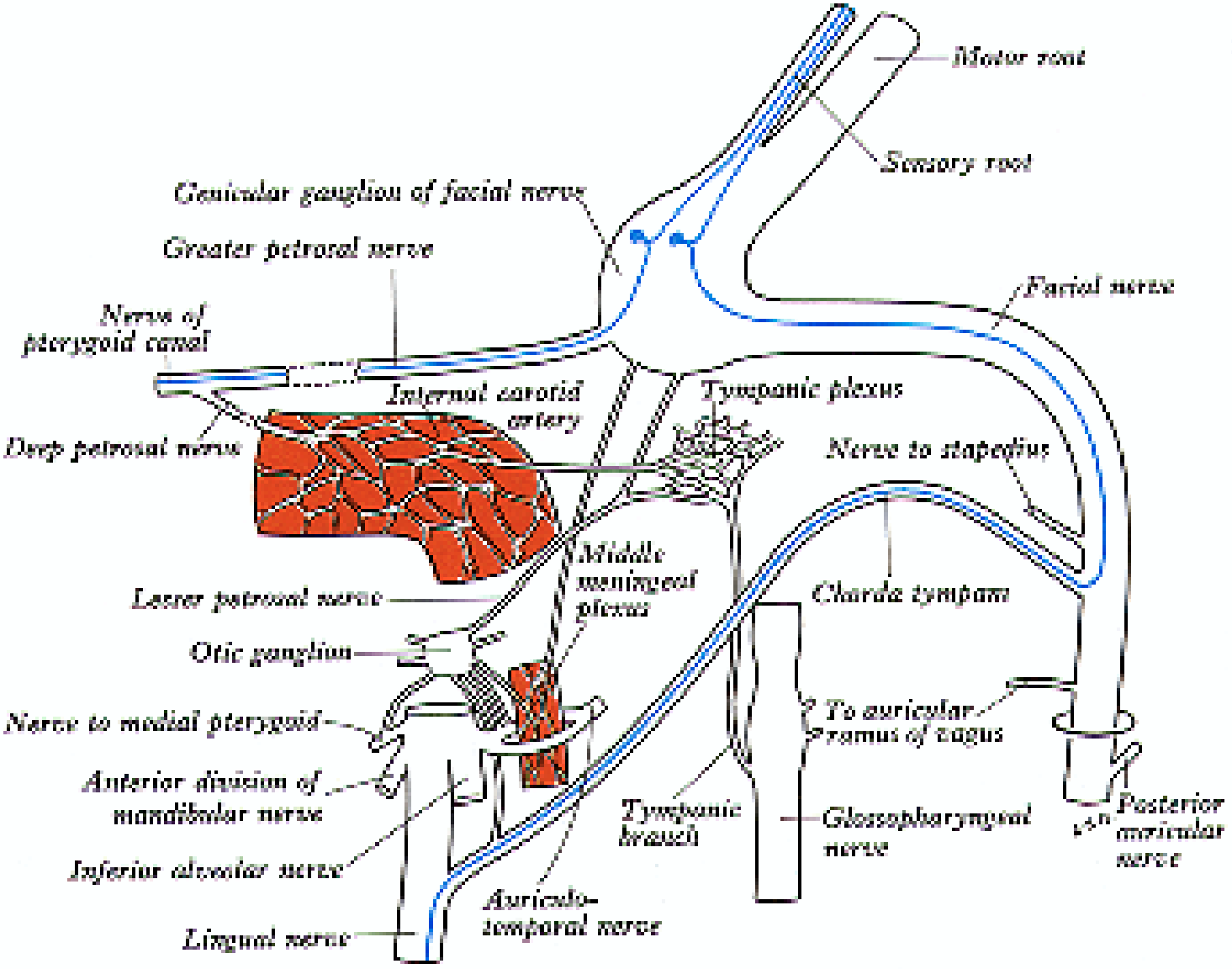
- Tympanic: arises from inf. Ganglion
  ascends to tymp. Cavity
  tympanic plexus
  Lesser petrosal nerve
- Carotid: arises just below jugular foramen
  to carotid sinus and body
  contains primary afferent fibres from
  chemoreceptors (body) and
  baroreceptors (sinus)
- Pharyngeal branches: 3-4, joins xth nerve & symp. Br.
  (pharyngeal plexus)
- Muscular: to stylopharnygeus
- Tonsillar
- Lingual

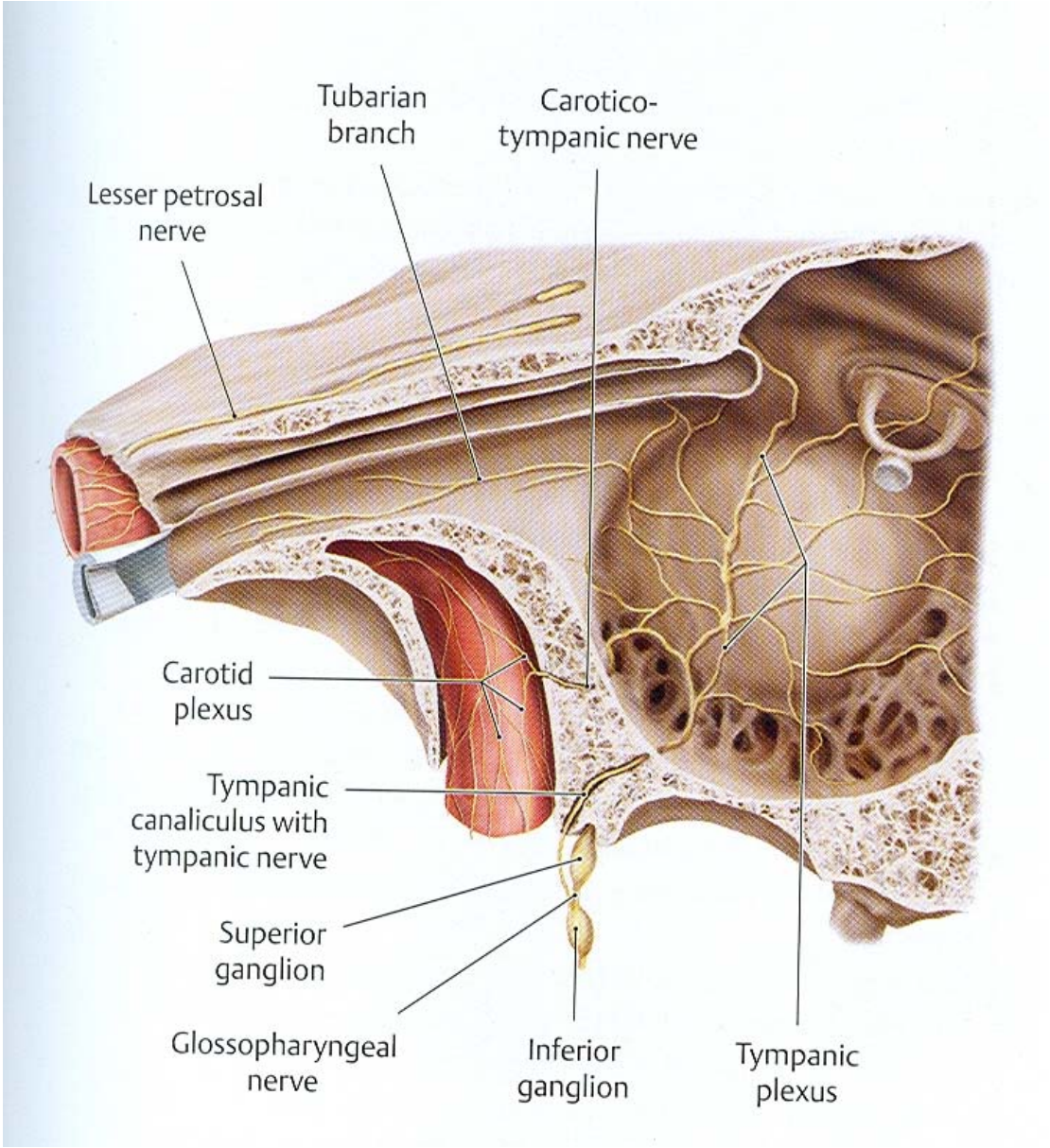
IX nerve-Lesions

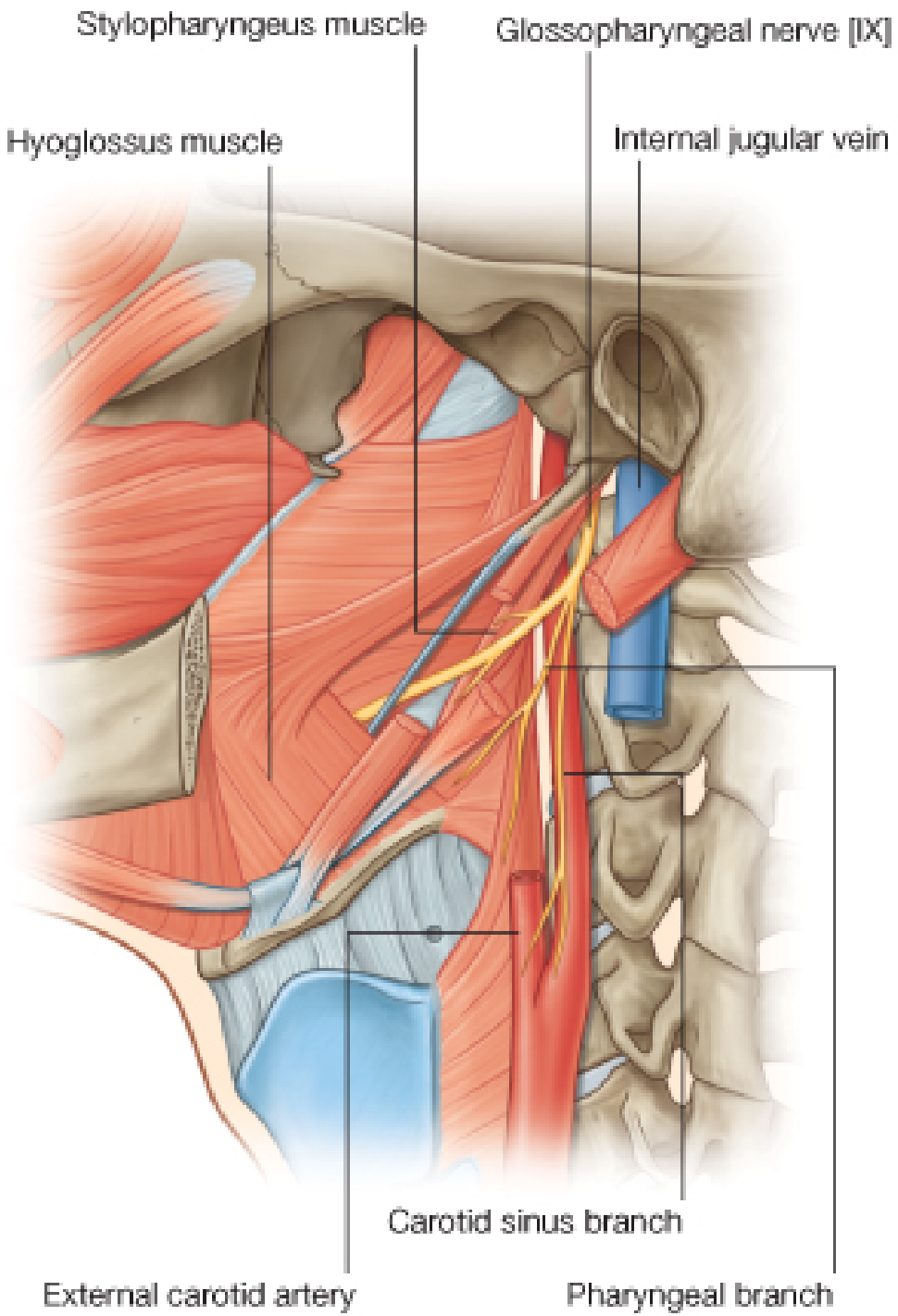
- Loss of general sensations over ipsilateral soft palate, pharynx and posterior 1/3of tongue.
- Reduction of saliva (parotid gland)
- Glossopharyngeal neuralgia
- Loss of carotid sinus reflex
- Loss of taste from post. 1/3 of tongue

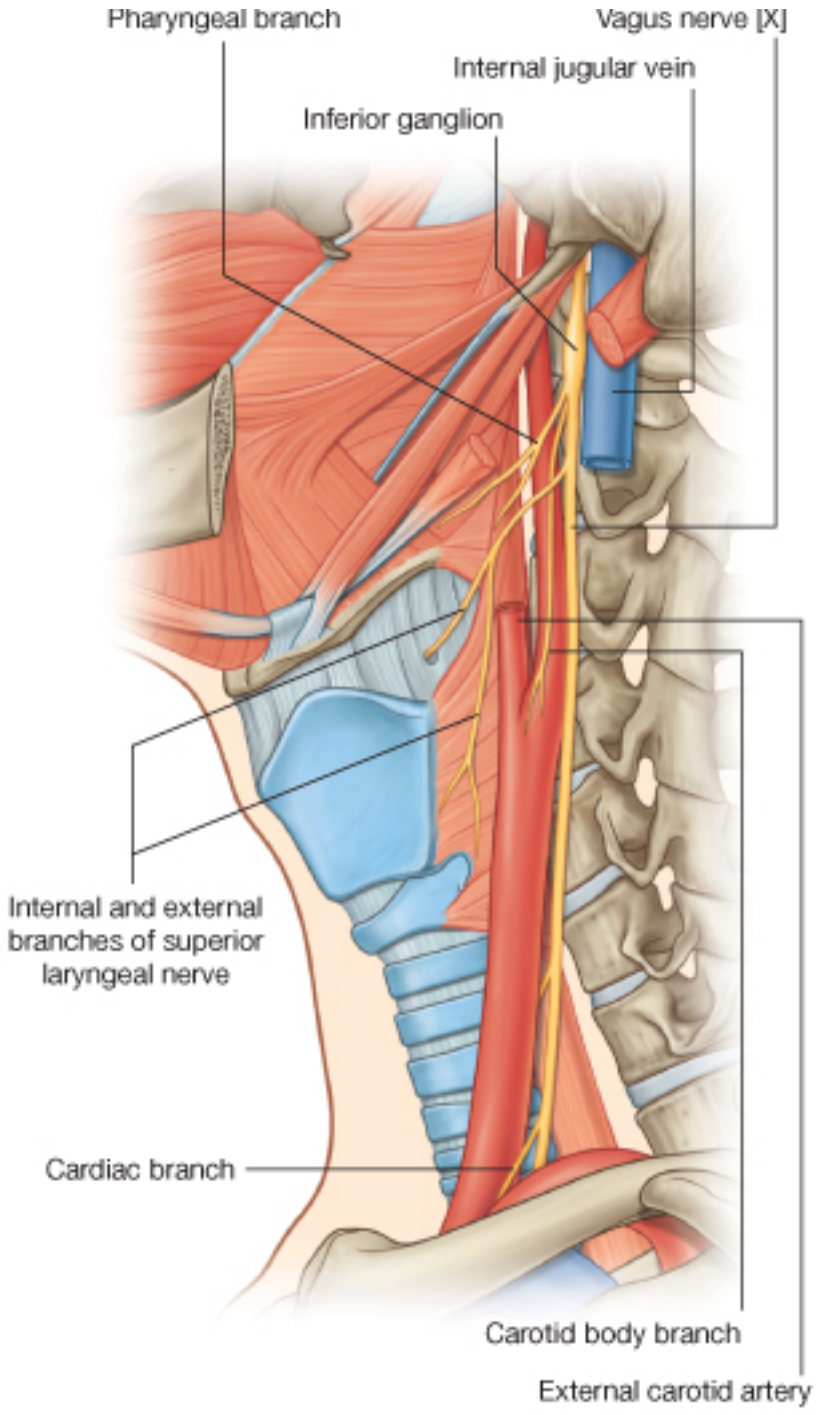

Inferior vagal ganglion
Accessory nerve
Internal carotid artery
Glosso-pharyngeal nerve
Pharyngeal branch of vagus
Internal laryngeal nerve
External laryngeal nerve
Common carotid artery
Vagus nerve
Recurrent laryngeal nerve
Brachiocephalic artery
Oesophagus
Pulmonary trunk
Deep cardiac plexus
Right principal bronchus
Right pulmonary artery
Upper right pulmonary vein
Oesophageal plexus
Lower right pulmonary vein
Anterior vagal trunk
Left lobe of liver
Inferior phrenic artery
A. H. Maxwell

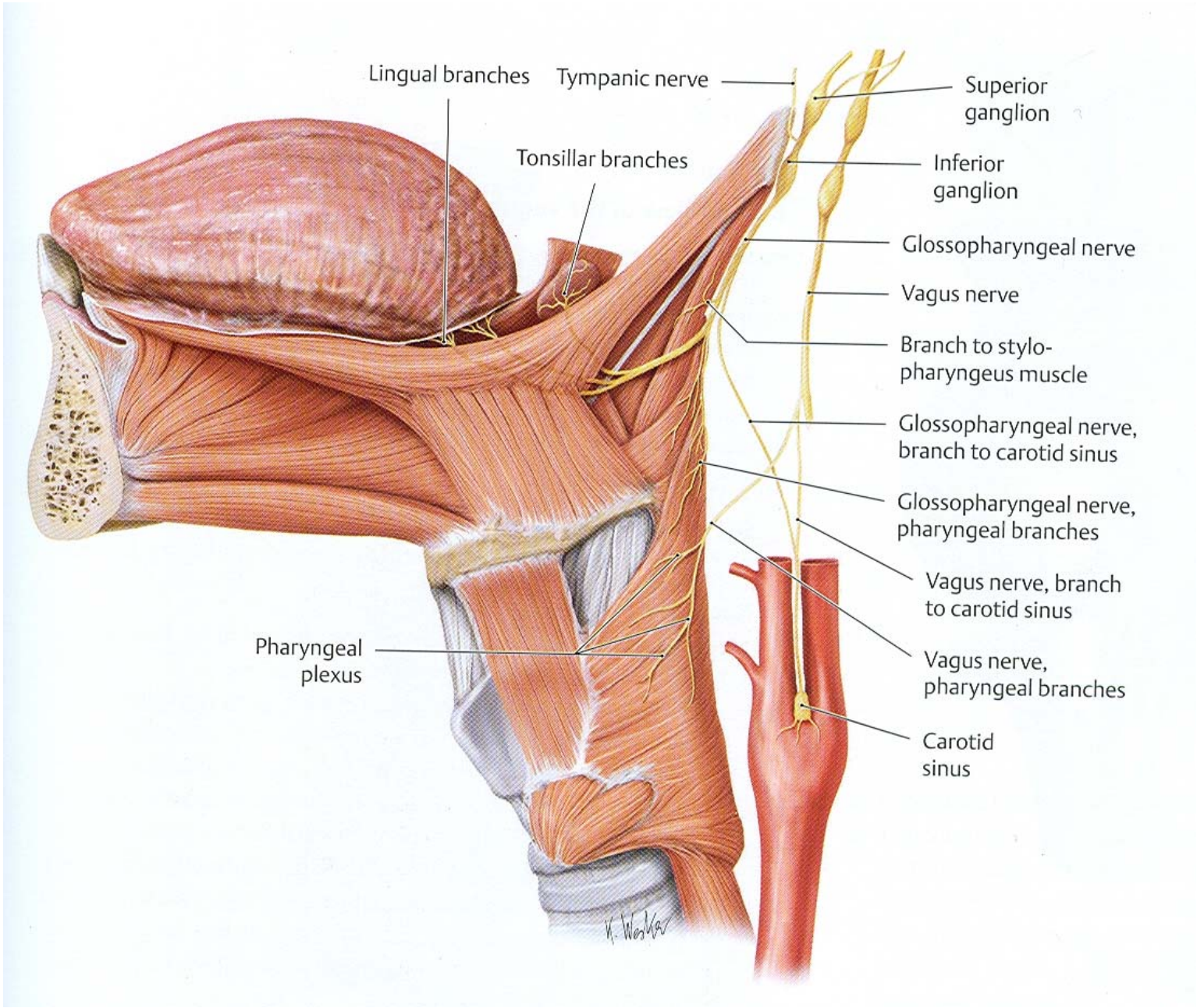

Trigeminal nerve
Sensory root
Motor root
Trigeminal ganglion
Nerve of pterygoid canal
Lesser petrosal nerve
Greater petrosal nerve
Geniculate ganglion
Tympanic branch of glossopharyngeal nerve (from tympanic plexus)
Tympanic membrane
Nervus spinosus
Chorda tympani
Nerve to tensor tympani
Otic ganglion
Sympathetic plexus
Facial nerve
Middle meningeal artery
Inferior alveolar nerve
Inferior alveolar artery
External carotid artery
Superior constrictor of pharynx (retracted downwards)
Medial pterygoid muscle
Ophthalmic nerve
Maxillary nerve
Ganglionic branches
Pterygopalatine ganglion
Anterior division of mandibular nerve
Nerve to tensor veli palatini
Lingual nerve
Medial pterygoid nerve
Buccinator muscle
Lingual nerve
Mylohyoid muscle
Mylohyoid artery
Mylohyoid nerve

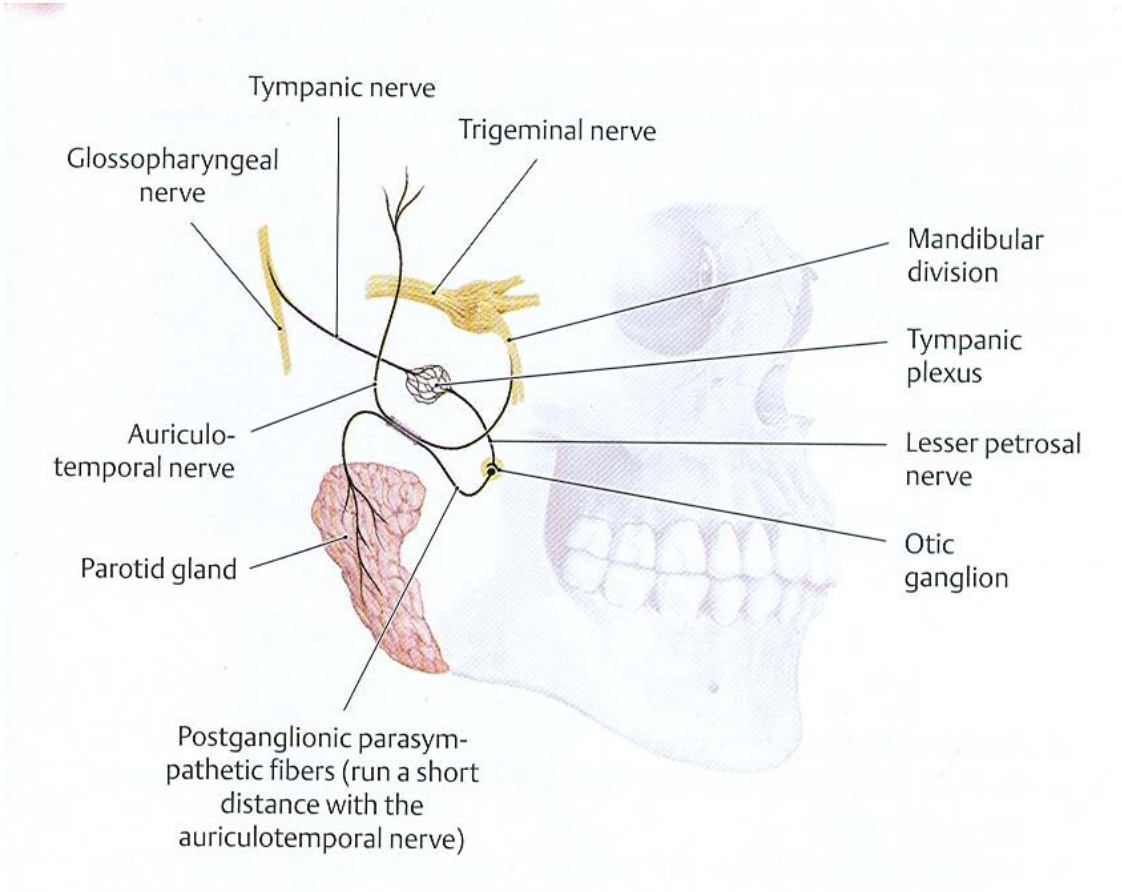

Motor root
Sensory root
Geniculate ganglion of facial nerve
Greater petrosal nerve
Facial nerve
Nerve of pterygoid canal
Internal carotid artery
Tympanic plexus
Deep petrosal nerve
Nerve to stapedius
Middle meningeal plexus
Lesser petrosal nerve
Chorda tympani
Otic ganglion
To auricular ramus of vagus
Nerve to medial pterygoid
Anterior division of mandibular nerve
Tympanic branch
Glossopharyngeal nerve
Posterior auricular nerve
Inferior alveolar nerve
Auriculo-temporal nerve
Lingual nerve

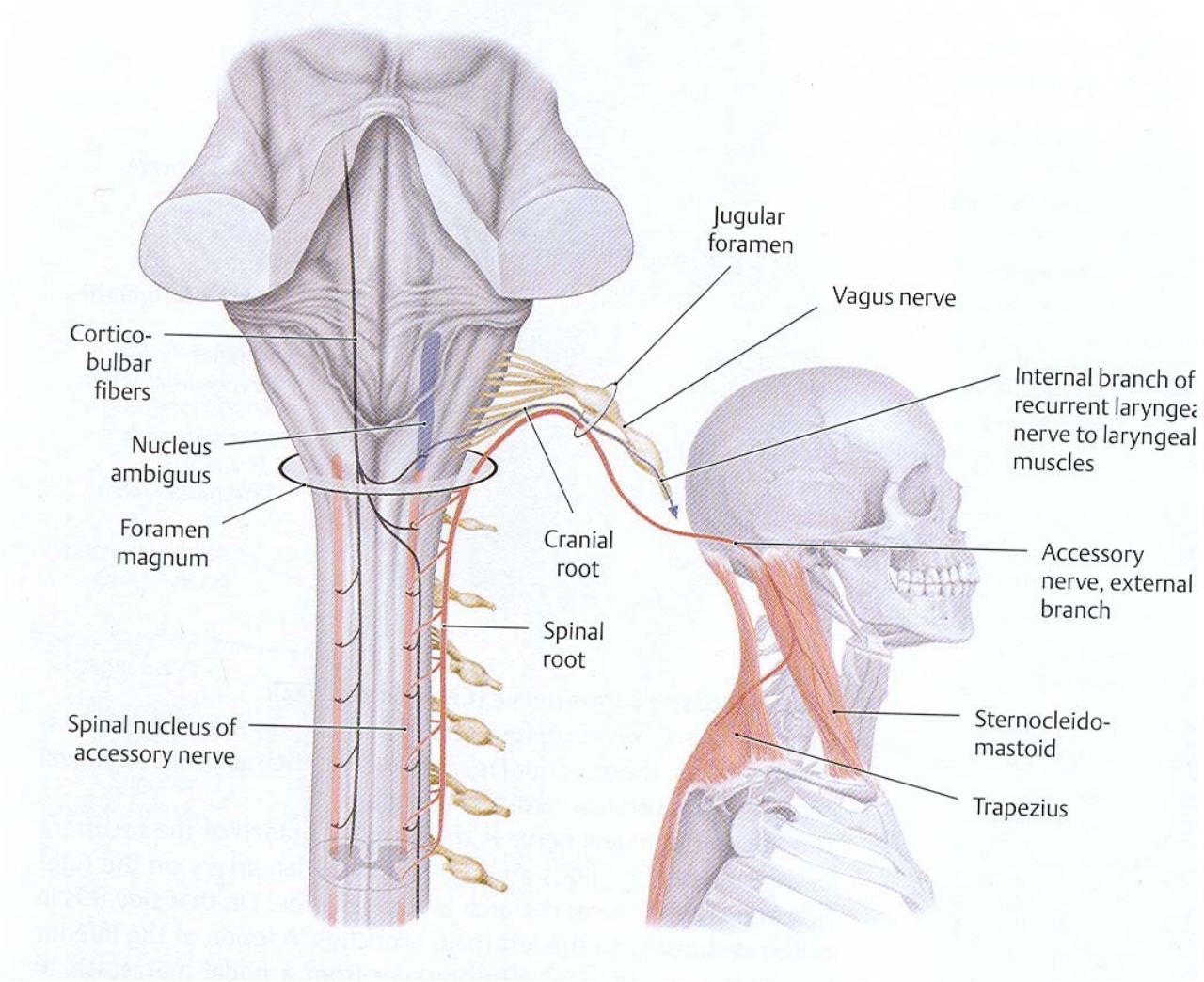

Tubarian branch
Carotico-tympanic nerve
Lesser petrosal nerve
Carotid plexus
Tympanic canaliculus with tympanic nerve
Superior ganglion
Glossopharyngeal nerve
Inferior ganglion
Tympanic plexus


Stylopharyngeus muscle
Glossopharyngeal nerve [IX]
Hyoglossus muscle
Internal jugular vein
Carotid sinus branch
External carotid artery
Pharyngeal branch


Pharyngeal branch
Vagus nerve [X]
Internal jugular vein
Inferior ganglion
Internal and external branches of superior laryngeal nerve
Cardiac branch
Carotid body branch
External carotid artery


Lingual branches
Tympanic nerve
Superior ganglion
Tonsillar branches
Inferior ganglion
Glossopharyngeal nerve
Vagus nerve
Branch to stylo-pharyngeus muscle
Glossopharyngeal nerve, branch to carotid sinus
Glossopharyngeal nerve, pharyngeal branches
Vagus nerve, branch to carotid sinus
Pharyngeal plexus
Vagus nerve, pharyngeal branches
Carotid sinus


Tympanic nerve
Trigeminal nerve
Glossopharyngeal nerve
Mandibular division
Tympanic plexus
Auriculo-temporal nerve
Lesser petrosal nerve
Otic ganglion
Parotid gland
Postganglionic parasym-pathetic fibers (run a short distance with the auriculotemporal nerve)


Jugular foramen
Vagus nerve
Cortico-bulbar fibers
Internal branch of recurrent laryngeal nerve to laryngeal muscles
Nucleus ambiguus
Foramen magnum
Cranial root
Accessory nerve, external branch
Spinal root
Spinal nucleus of accessory nerve
Sternocleido-mastoid
Trapezius

Accessory nerve

- Cranial root: Smaller than the spinal root
  - arises from nucleus ambiguus
  - exits thro’ jugular foramen
  - unites to spinal acc. for short distance
  - also connected to sup. Vagal ganglion
  - joins Xth nerve
  - Distributed to pharynx & larynx muscles via vagus nerve

Accessory nerve

- Spinal root: arises from an elongated Nucleus of motor cells from medulla to upper 6^{th} cervical segments.

  Rootlets form a trunk

  ascends between lig. denticulatum and dorsal root of spinal nerve.

  Enter skull via foramen magnum,turns laterally & reaches jugular foramen

  descends obliquely, medial to styloid process

  reaches upper part of SCM, supplies

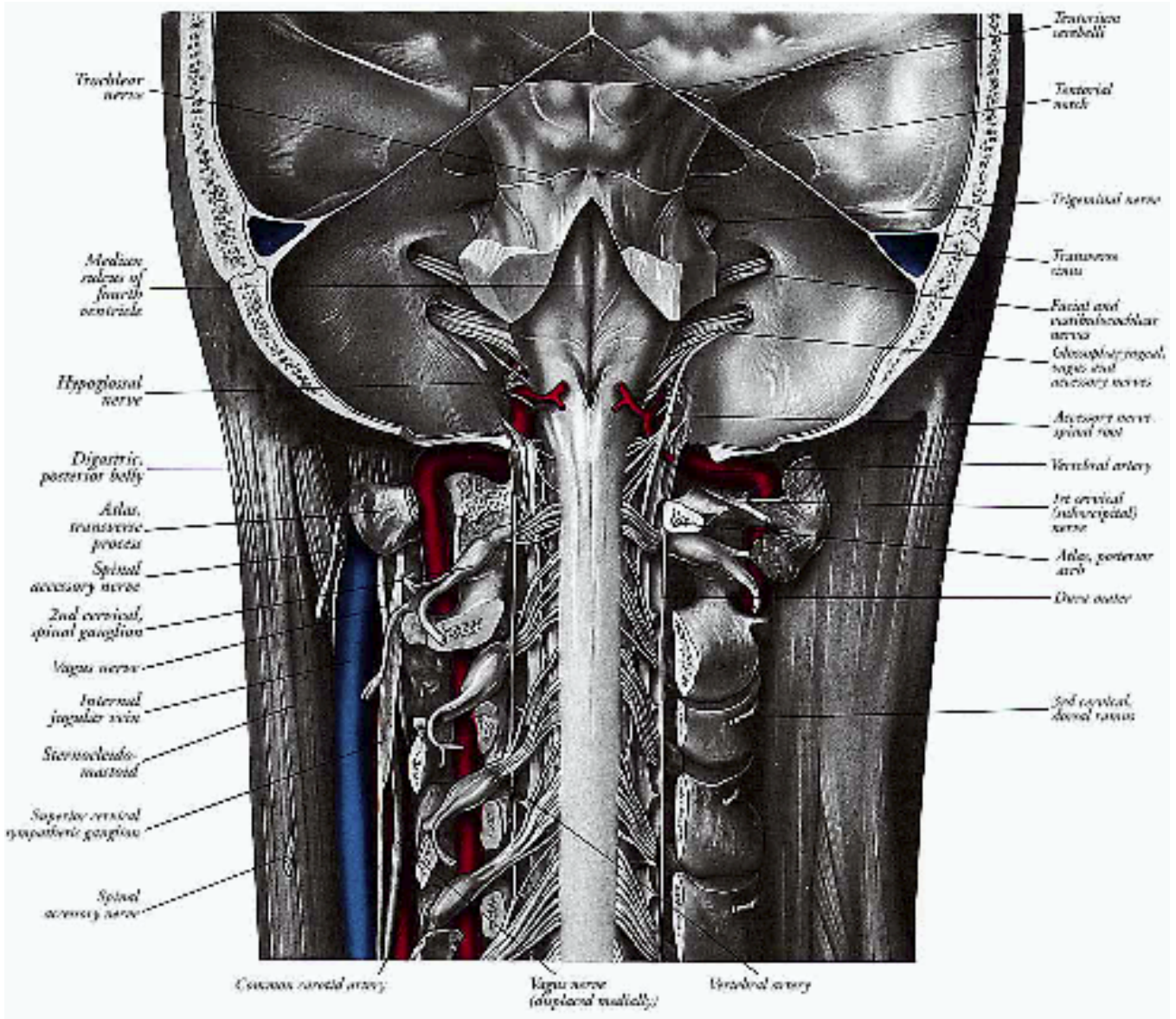
  emerges at mid pt. in post. Triangle in its roof

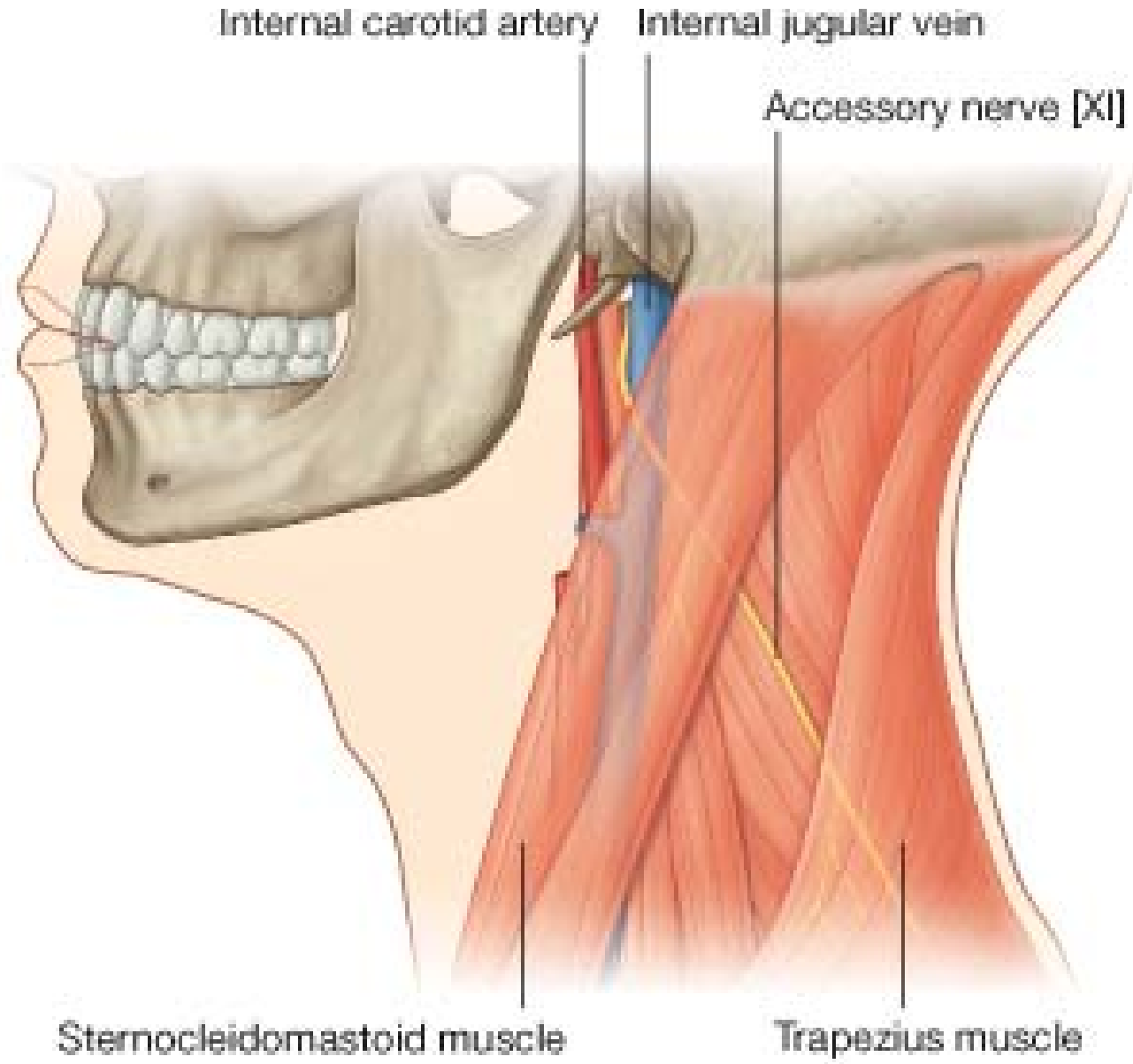
  passes behind ant. Border of trapezius, supplies

Functional components:

i) Motor to 6th arch (through vagus) - Br E

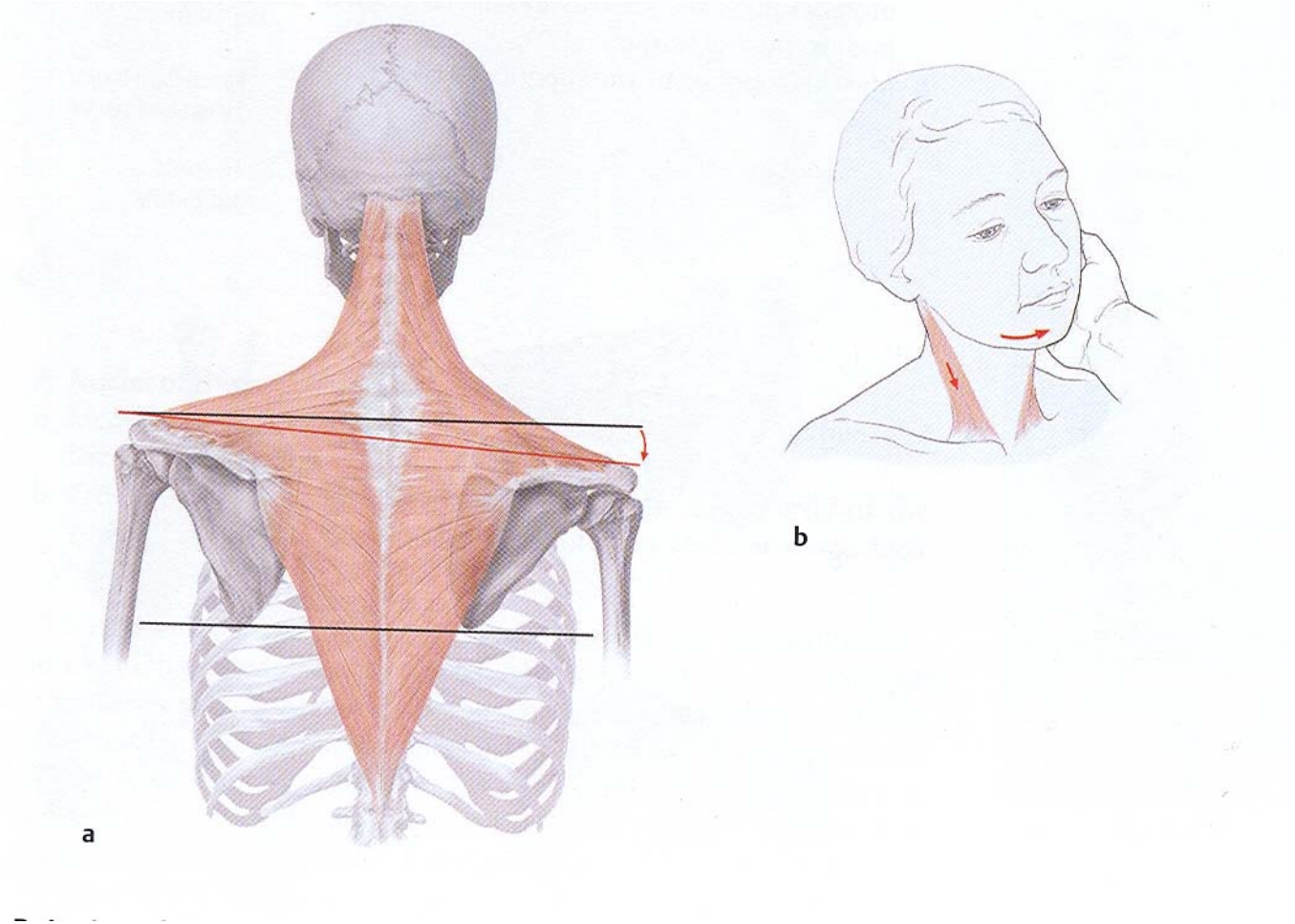
ii) Motor to sternocleidomastoid and trapezius - GSE


Trochlear nerve
Medial recess of fourth ventricle
Hypoglossal nerve
Digastric, posterior belly
Atlas, transverse process
Spinal accessory nerve
2nd cervical, spinal ganglion
Vagus nerve
Internal jugular vein
Sternocleido-mastoid
Superior cervical sympathetic ganglion
Spinal accessory nerve
Transverse cerebelli
Tentorial notch
Trigeminal nerve
Transverse sinus
Facial and vestibulocochlear nerves
Glossopharyngeal, vagus and accessory nerves
Accessory nerve, spinal root
Vertebral artery
1st cervical (suboccipital) nerve
Atlas, posterior arch
Dura mater
3rd cervical, dorsal ramus
Cochlear carotid artery
Vagus nerve (displaced medially)
Vertebral artery


Internal carotid artery
Internal jugular vein
Accessory nerve [XI]
Sternocleidomastoid muscle
Trapezius muscle

XIth Nerve- lesions

- Weakness of ipsilateral SCM and contralateral Trapezius
- Spasmodic torticollis
- Injury in Posterior triangle- Intractable neuralgia


a
b