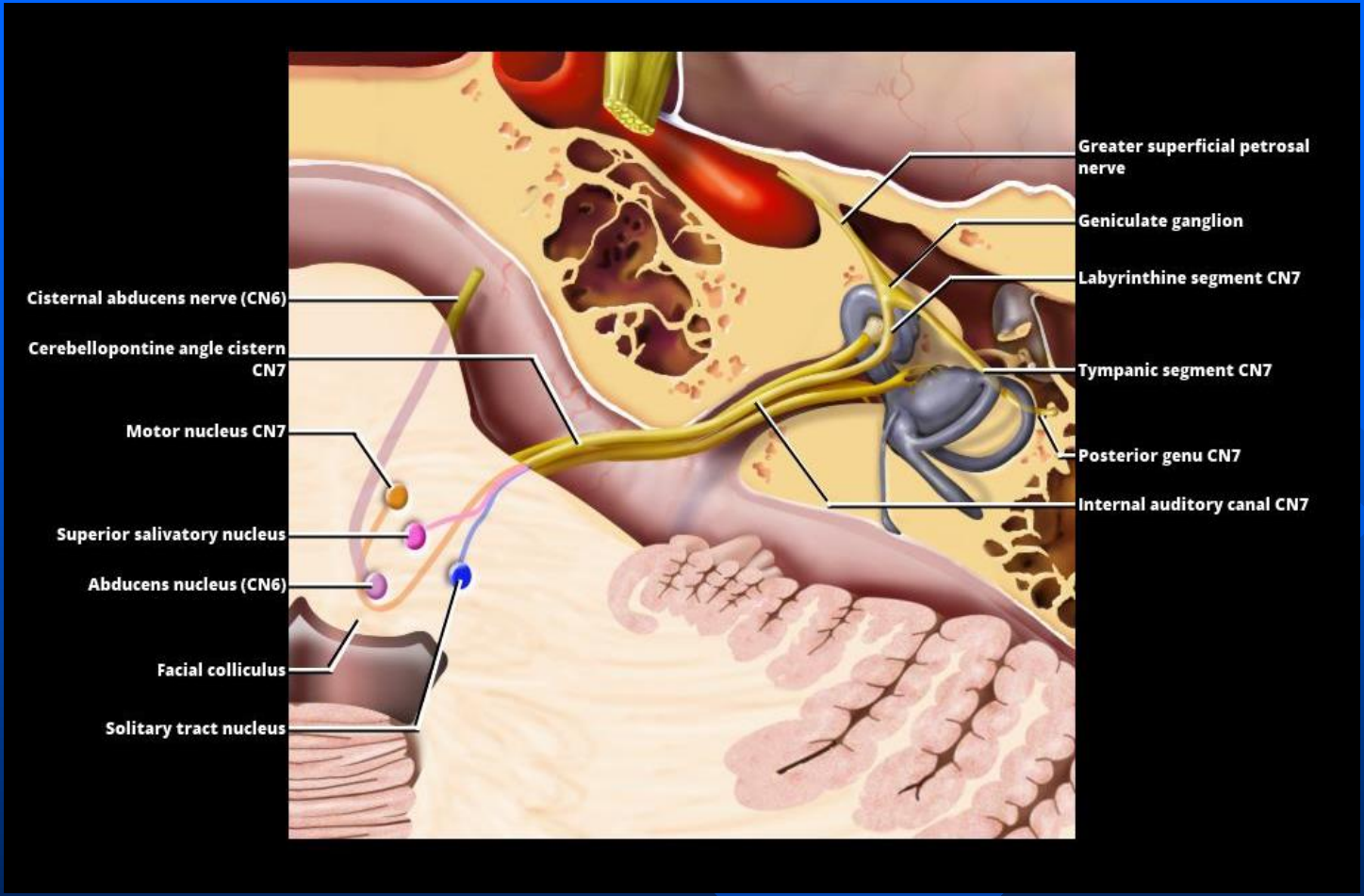
Facial Nerve Anatomy

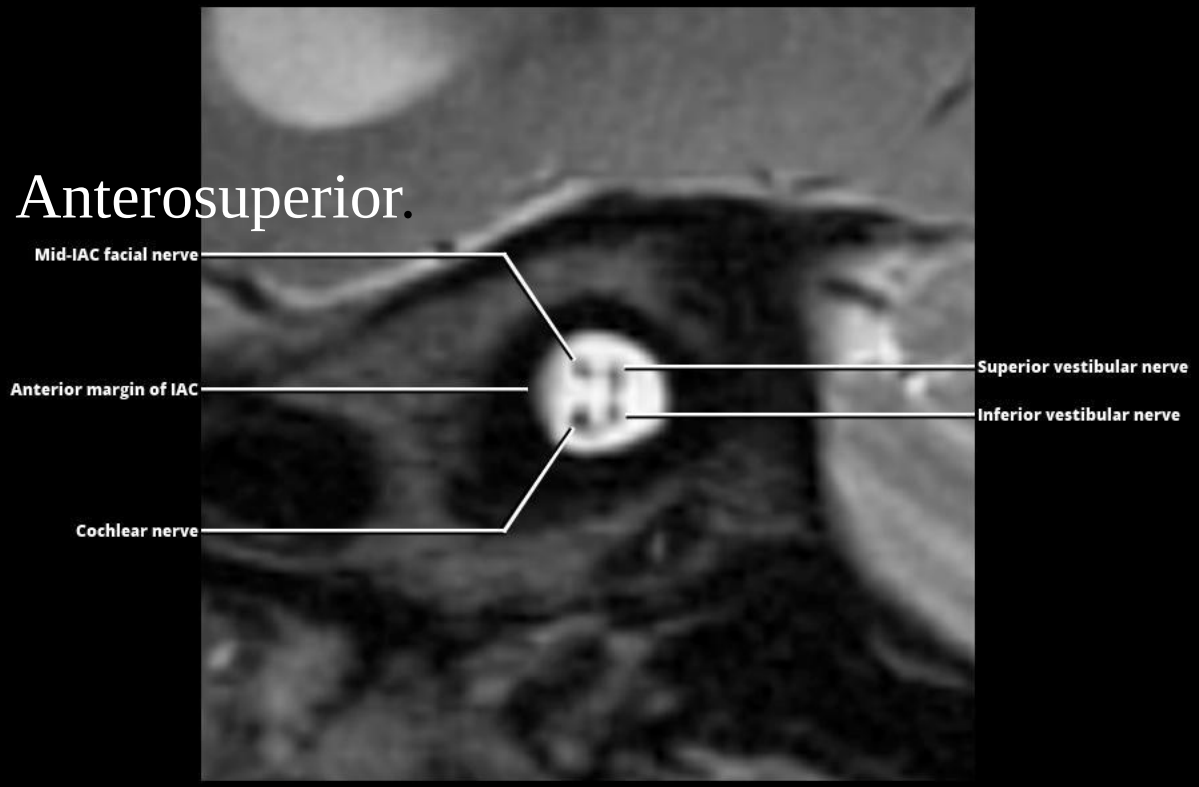


Axial graphic of CN7 nuclei. Motor nucleus sends out its fibers to circle CN6 nucleus before reaching root exit zone at pontomedullary junction.

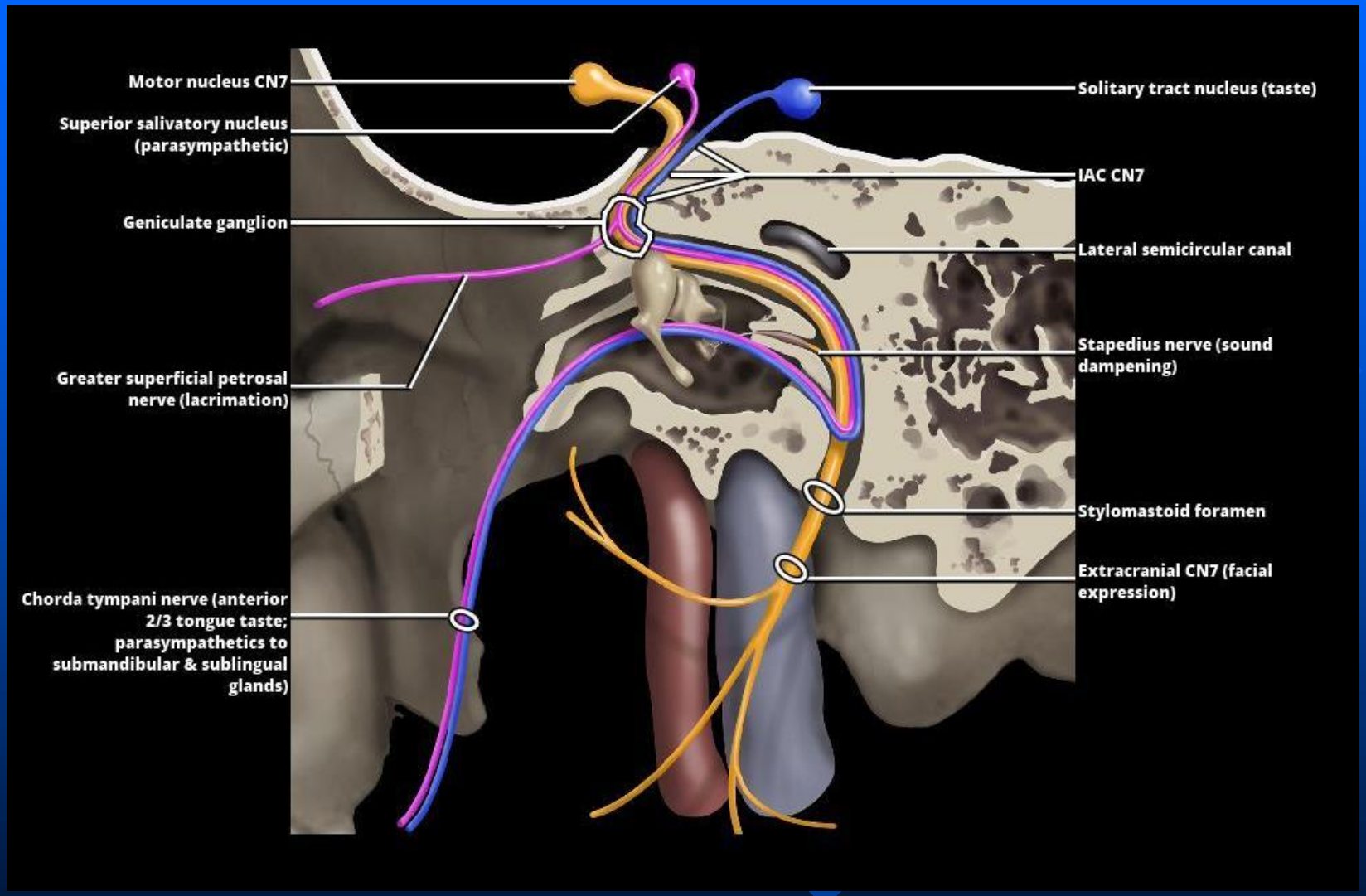
Superior salivatory nucleus sends parasympathetic secretomotor fibers to lacrimal, submandibular and sublingual glands.

Solitary tract nucleus receives anterior 2/3 tongue taste information.

Anterosuperior.



In the mid-internal auditory canal (IAC) 4 nerves are clearly identified. The facial nerve is anterosuperior.


Motor nucleus CN7
Superior salivatory nucleus (parasympathetic)
Geniculate ganglion
Greater superficial petrosal nerve (lacrimation)
Chorda tympani nerve (anterior 2/3 tongue taste; parasympathetics to submandibular & sublingual glands)
Solitary tract nucleus (taste)
IAC CN7
Lateral semicircular canal
Stapedius nerve (sound dampening)
Stylomastoid foramen
Extracranial CN7 (facial expression)

4 Segments

- Intraaxial
- Cisternal
- Intratemporal
- Extracranial (parotid)

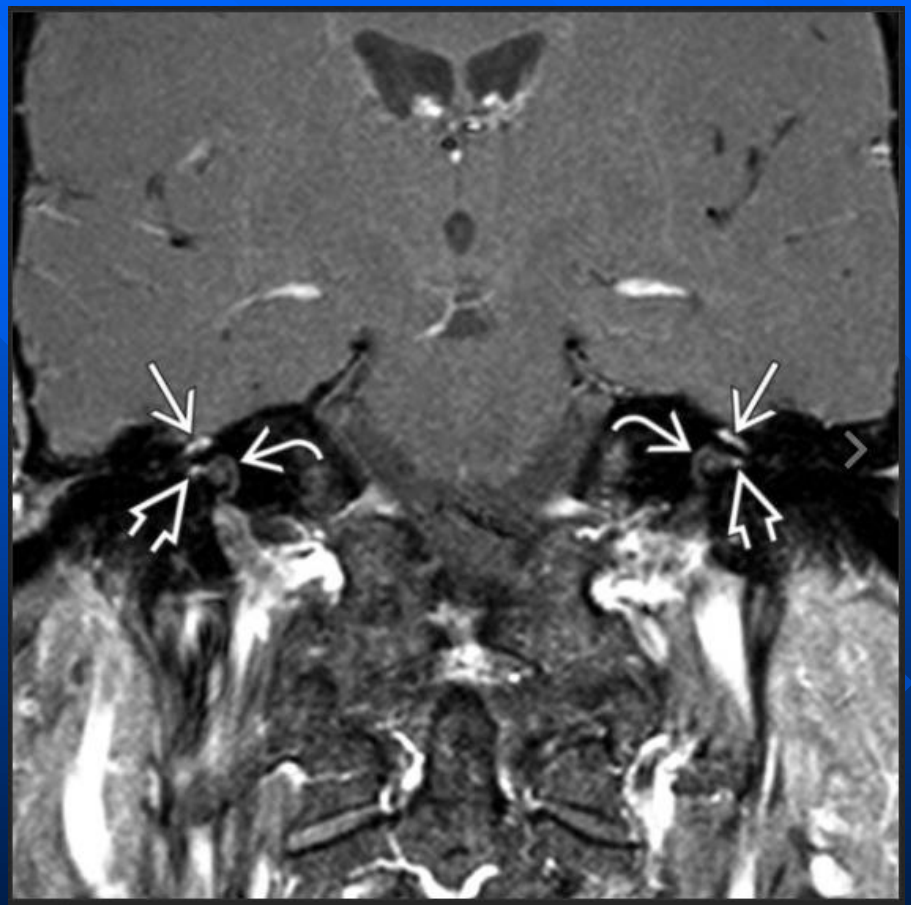
Intratemporal Segment

- IAC
  - Porus acusticus to IAC fundus;
- Labyrinthine
  - Connects fundal CN7 to geniculate ganglion
- Tympanic
  - Connects anterior to posterior genu, passing under lateral semicircular canal
  - Posterior genu connects tympanic to mastoid CN7
- Mastoid
  - Inferiorly directed from posterior genu to stylomastoid foramen
  - Stapedius & chorda tympani nerves branch from mastoid segment

Facial Nerve Enhancement,

- Normal
  - Geniculate ganglion
  - Tympanic
  - Mastoid segments
- Normal CN7 enhancement will not change over time!

- Not normal
  - Cisternal
  - Labyrinthine segment
  - Extracranial mastoid FN



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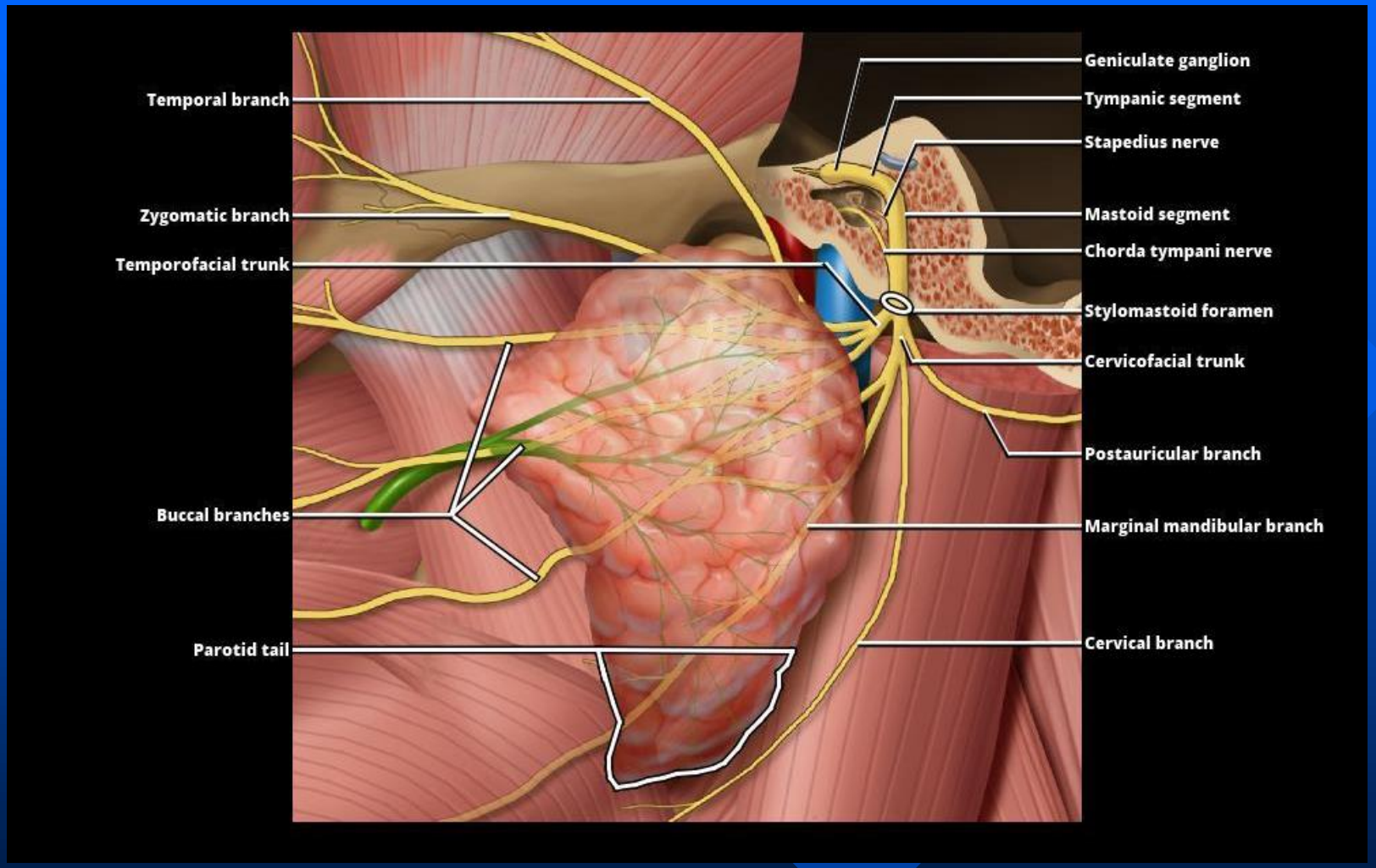
Coronal T1WI C+ FS MR in the same patient shows the normal geniculate ganglion enhancement → just superior to the cochleas ↗. Note that the tensor tympani muscles ⇨ both also enhance. With 3T imaging, more normal enhancement of structures within the temporal bone is seen.


Temporal branch
Zygomatic branch
Temporofacial trunk
Buccal branches
Parotid tail
Geniculate ganglion
Tympanic segment
Stapedius nerve
Mastoid segment
Chorda tympani nerve
Stylomastoid foramen
Cervicofacial trunk
Postauricular branch
Marginal mandibular branch
Cervical branch