Facial Nerve

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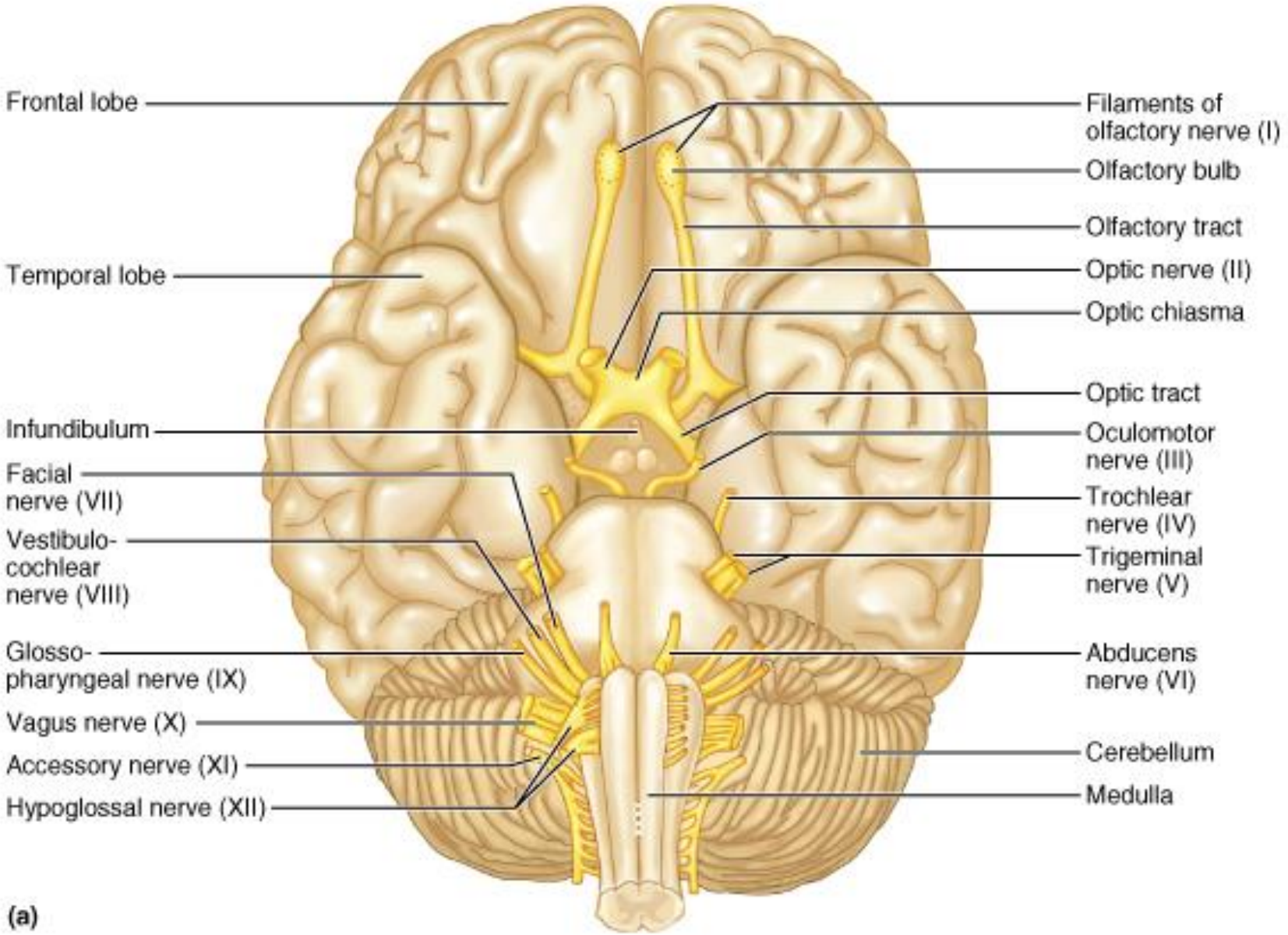
Cranial nerves

- Largest cranial nerve – **trigeminal**
- Longest cranial nerve – **vagus**
- m/c paralyzed – facial nerve
- m/c involved in **intracranial lesions- abducent**
- Longest – Intracanalicular course- **facial**
- **Dorsal** aspect of brain- trochlear - **most slender**
- Only motor branch of **9th** cranial nerve – **Stylopharyngeus**
- True peripheral n except- optic tract
- Monosynaptic reflex in brain – jaw jerk/masseteric reflex

Cranial Nerves



Location of cranial nerves

- Anterior cranial fossa: C.N. 1–2
- Middle cranial fossa: C.N. 3-6
- Posterior cranial fossa: C.N. 7-12

Sensory nerve

- Olfactory (1)
- Optic (2)
- Vestibulocochlear (8)

Motor nerve

- Oculomotor (3)
- Trochlear (4)
- Abducens (6)
- Accessory (11)
- Hypoglossal (12)

Mixed nerves

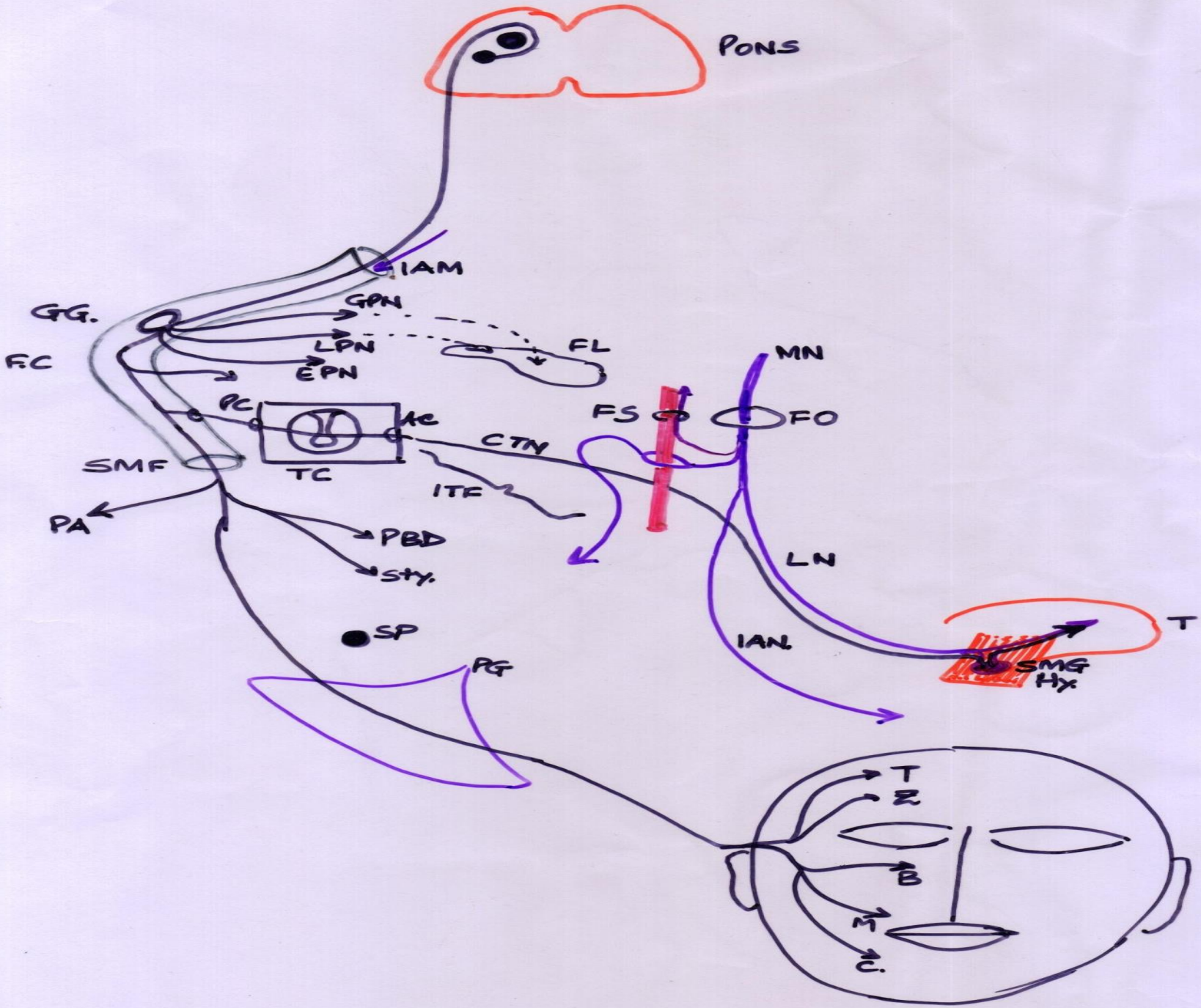
- Trigeminal (5)
- Facial (7)
- Glossopharyngeal (9)
- Vagus (10)

Innervation of Branchial arch muscles –Mixed nerves

- 1 - Trigeminal
- 2 - Facial
- 3 - Glossopharyngeal
- 4 – Vagus - SLN
- 5 – Regresses
- 6 – Vagus - RLN

Cranial Nerve VII: Facial

- Fibers leave lower pons,
- travel through internal acoustic meatus,
- emerge through stylomastoid foramen
- to lateral aspect of face
- Pass through Parotid gland
- Mixed nerve with five major branches
- Motor functions include facial expression,
- autonomic impulses to lacrimal & salivary glands
- Sensory function is taste from anterior two-thirds of tongue – Chorda tympani n


PONS
IAM
GG.
GPN
LPN
EPN
F.C
FL
MN
PC
FS
FO
CTN
SMF
TC
ITF
PA
PBD
Sty.
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IAN
T
SMG
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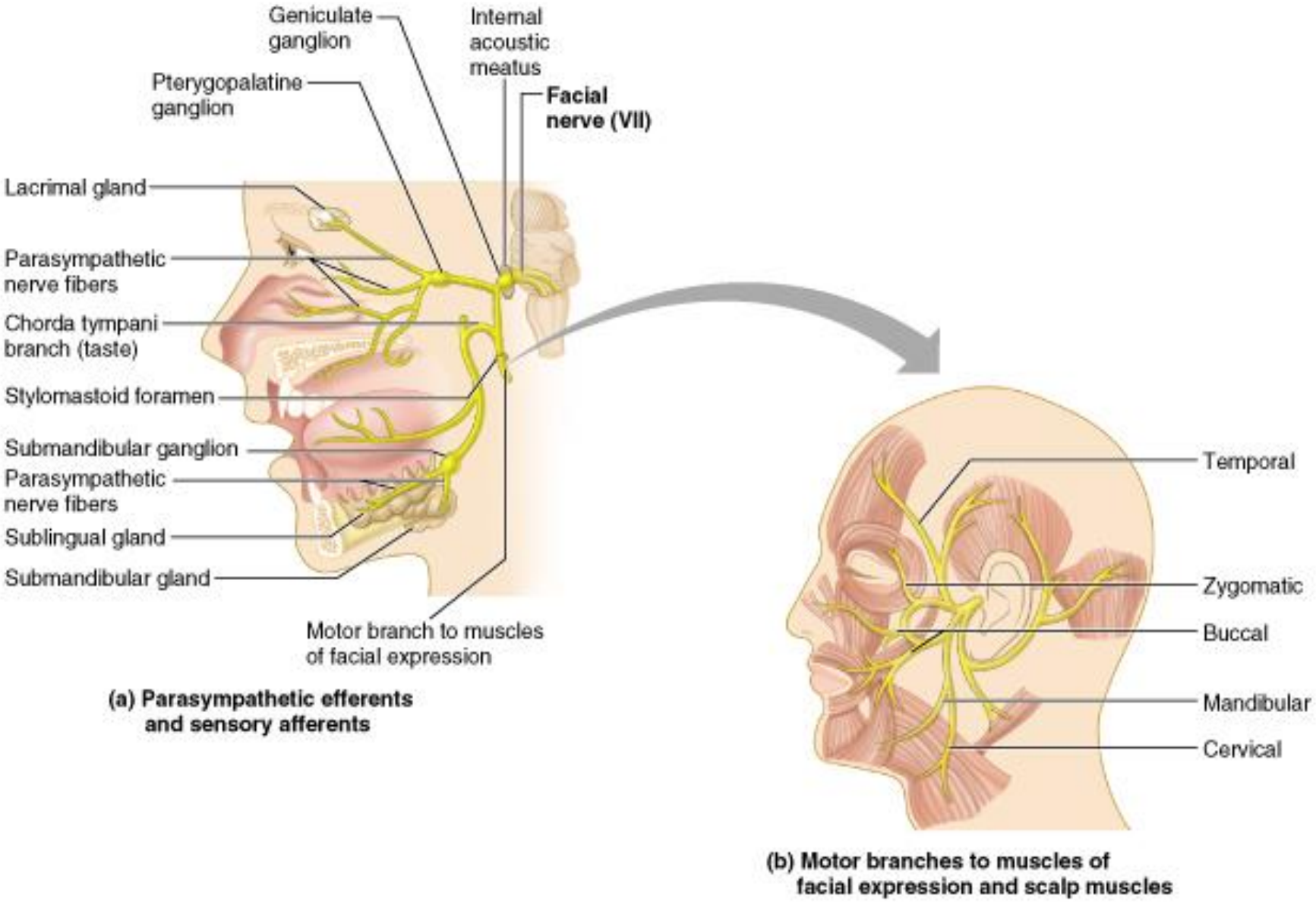
PG
T
Z
B
M
C.

Cranial Nerve VII: Facial

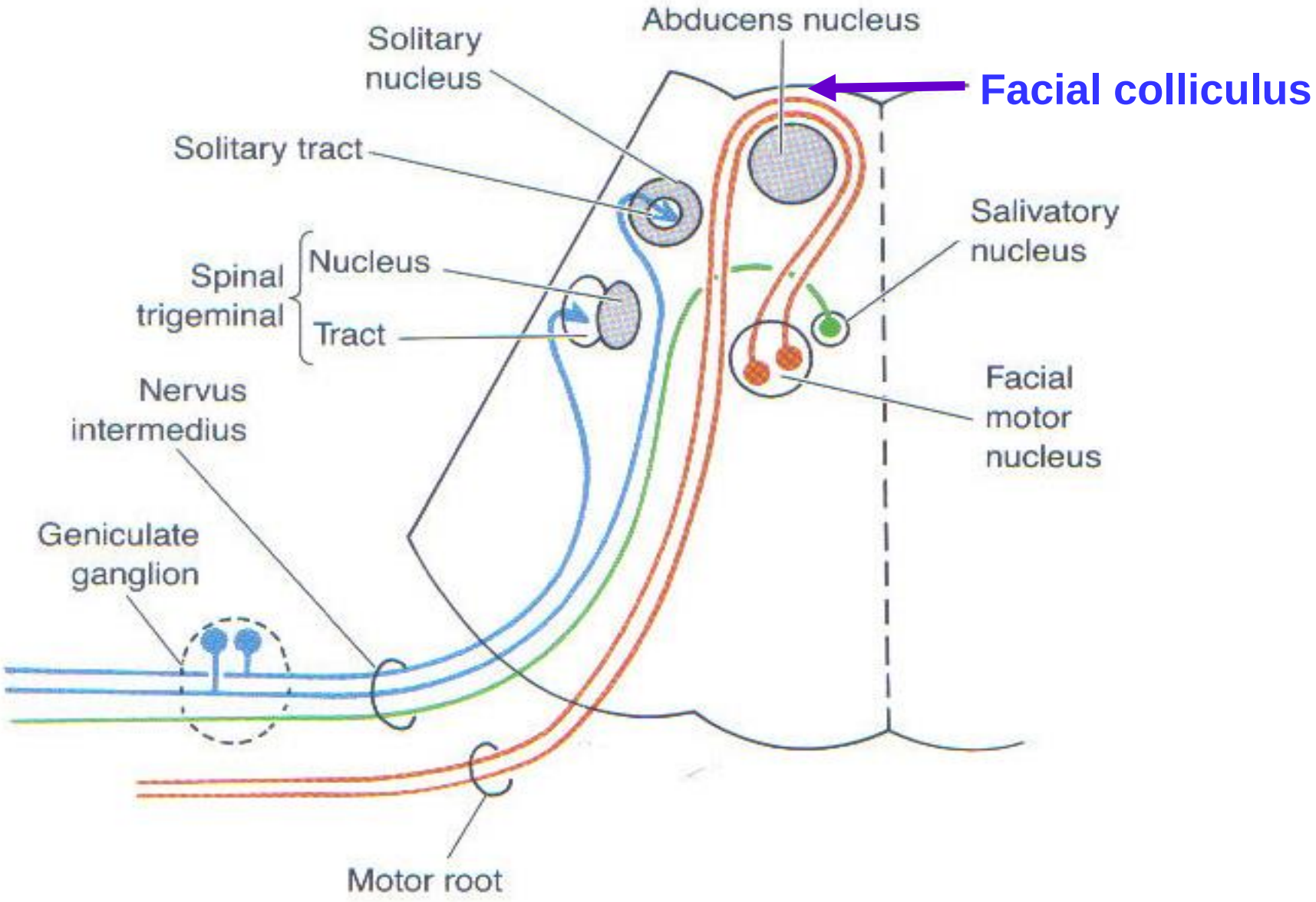


FACIAL N:-

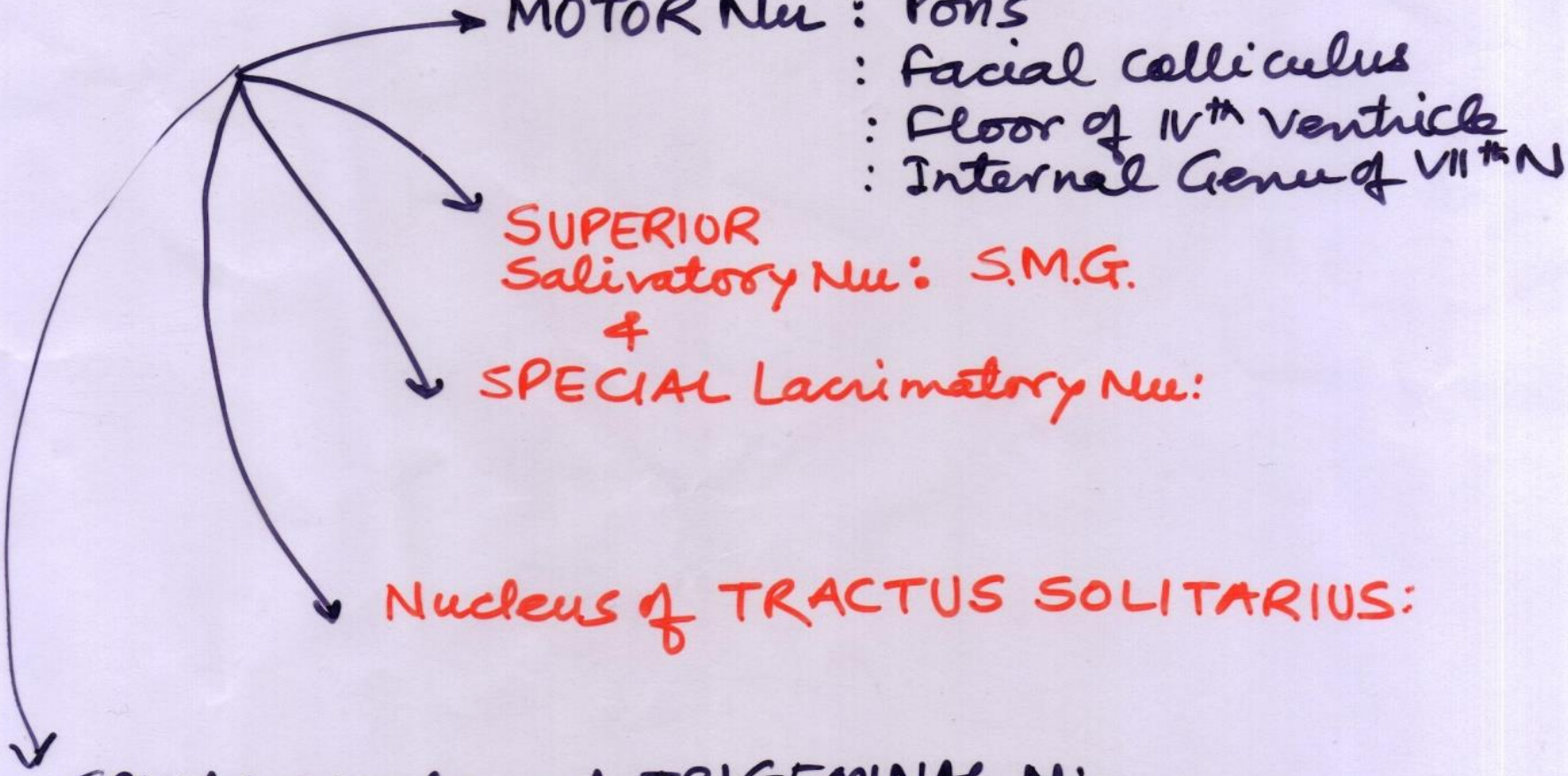
MR
SR - N intermedius.

Functional components:-

- Branchiomotor — IInd Branchial Arch
- Secretomotor:
  - LACRIMAL gland
  - SUBMANDIBULAR + SUBLINGUAL glands
- Gustatory:- Ant 2/3 of Tongue
- ? CUTANEOUS
  ° SOMATOSENSORY :- Concha of Auricle


Abducens nucleus
Solitary nucleus
Facial colliculus
Solitary tract
Salivatory nucleus
Spinal trigeminal
Nucleus
Tract
Facial motor nucleus
Nervus intermedius
Geniculate ganglion
Motor root

Nucleuses of FACIAL N :



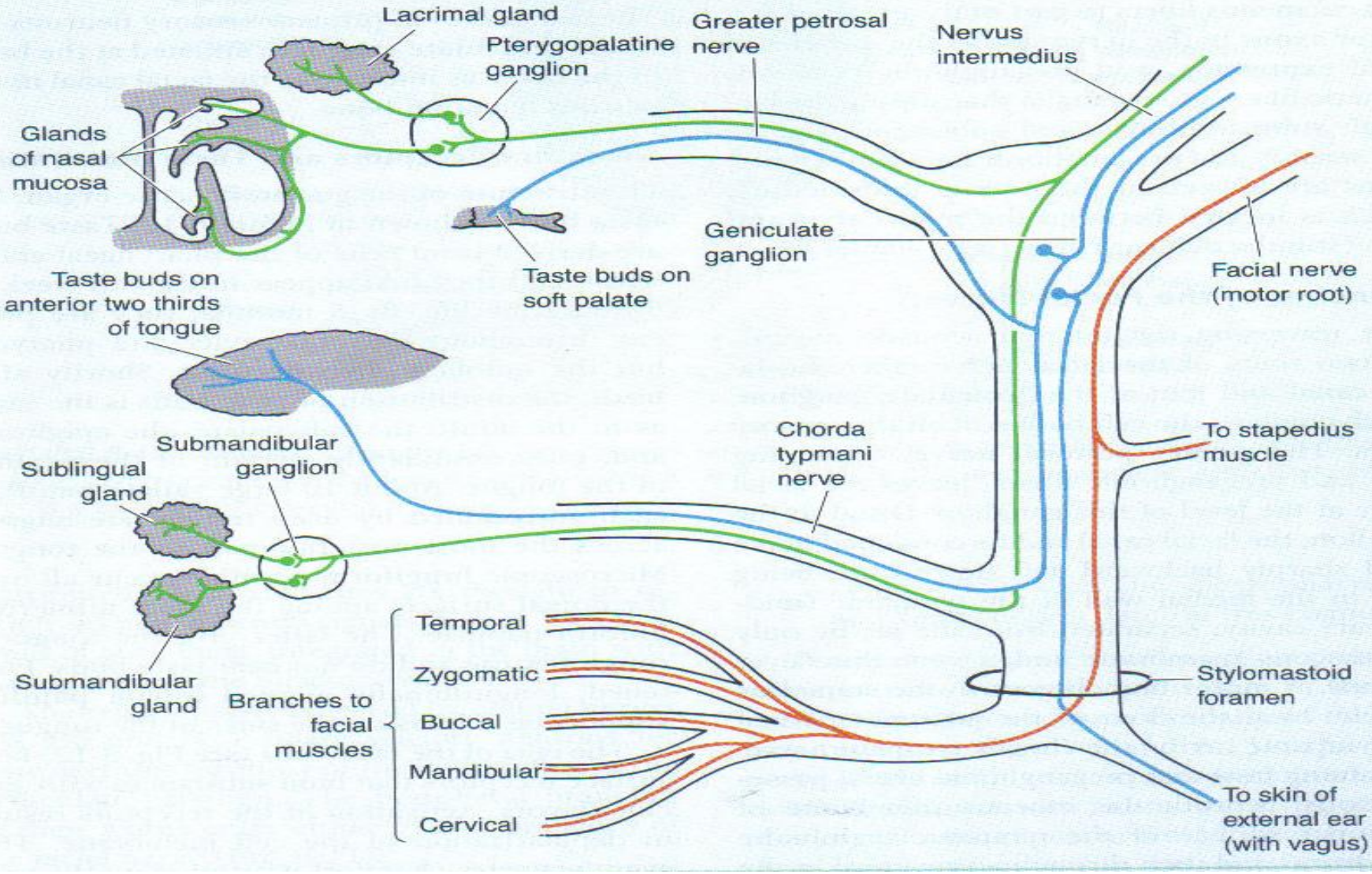
1. **Motor nucleus of facial nerve** (facial nucleus) → 2nd branchial arch muscles → muscles of facial expression .

2. **Superior salivatory nucleus** - To chorda tympani branch →joins lingual branch of Lingual n -V_3- in Infratemporal fossa → **submandibular ganglion → submandibular, sublingual & acc lingual glands**

3. **Lacrimal nucleus** - greater petrosal branch + deep petrosal n - **pterygopalatine ganglion → Lacrimal glands & paranasal sinuses**

The Facial Nerve and the Middle Ear

The facial nerve is vulnerable in the middle ear, which is a region commonly invaded by bacteria and surgery. The exact site of a lesion can be determined by applying knowledge of the branches containing different functional components (Fig. 8-11).



1. **Geniculate ganglion**

   Central processes → nervus intermedius

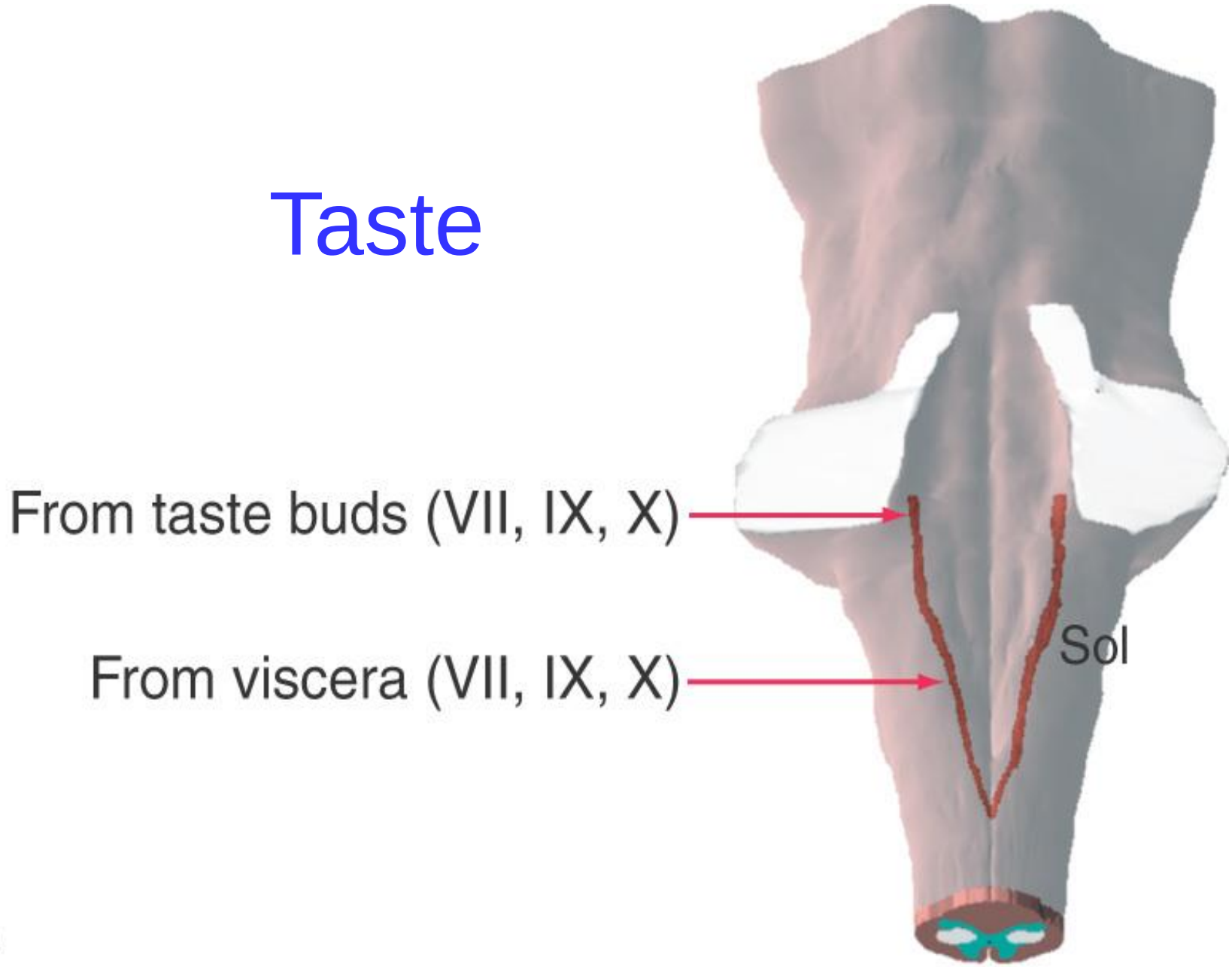
   Peripheral processes → chorda tympani, greater petrosal and deep petrosal nn → vidian nerve → Pterygopalatine ganglion.

(some fibers join the auricular branch of the vagus)

2. **Gustatory nucleus** - nucleus of **tractus solitarius**

3. **Nucleus of spinal trigeminal tract** - From nervus intermedius

Taste



Taste sensations

- Facial N.
- Glossopharyngeal N.
- Vagus N.
- **Nucleus tractus solitarious**

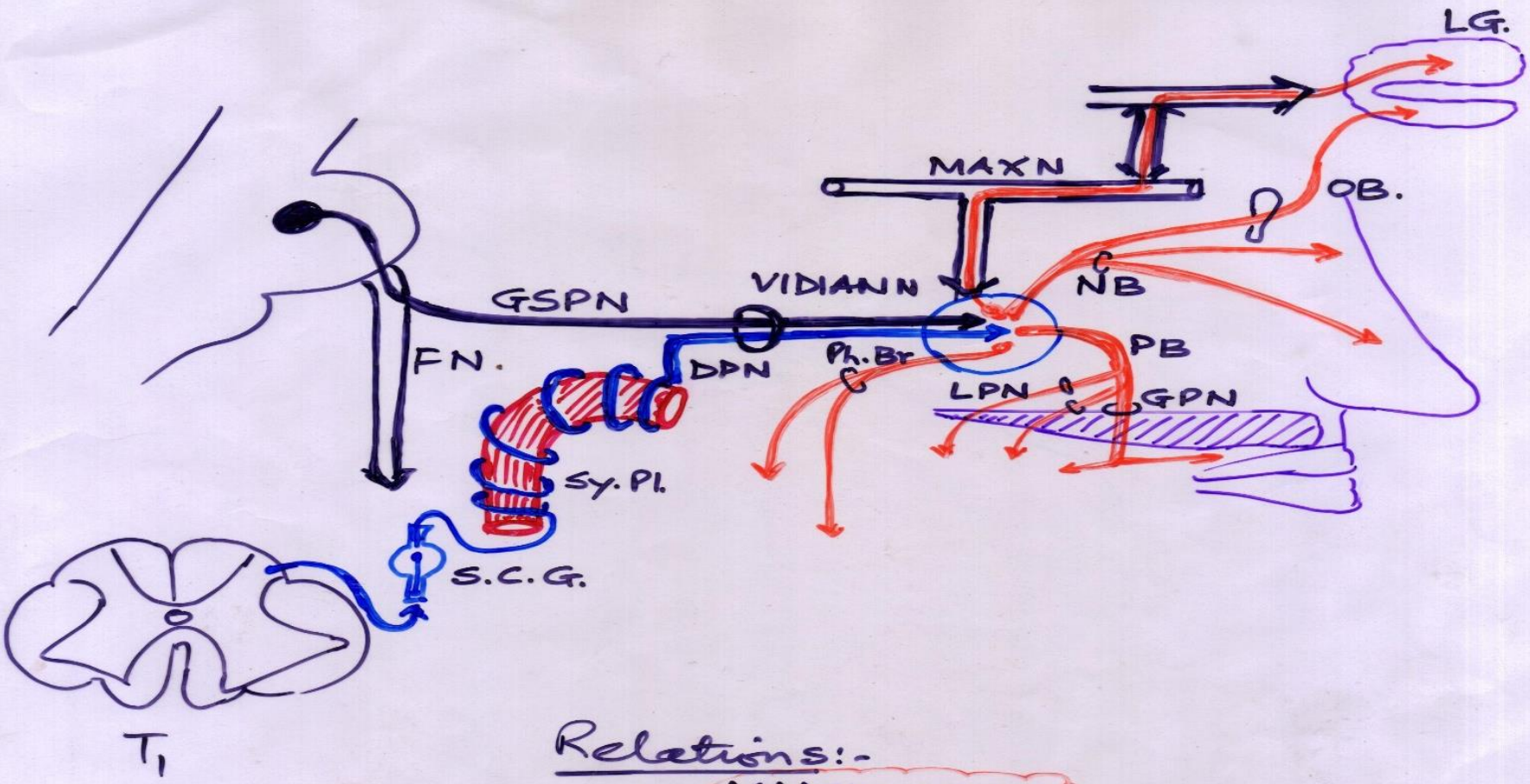
Parasympathetic ganglion

Ciliary ganglion

Pterygopalatine ganglion

Submandibular ganglion

Otic ganglion



Relations:-

MAXILLARY. N

SUPERIOR

POST — P.P.G — ANT

INFERIOR

Pterygoid canal.

Middle Nasal concha

Medial

Sphenopalatine F.

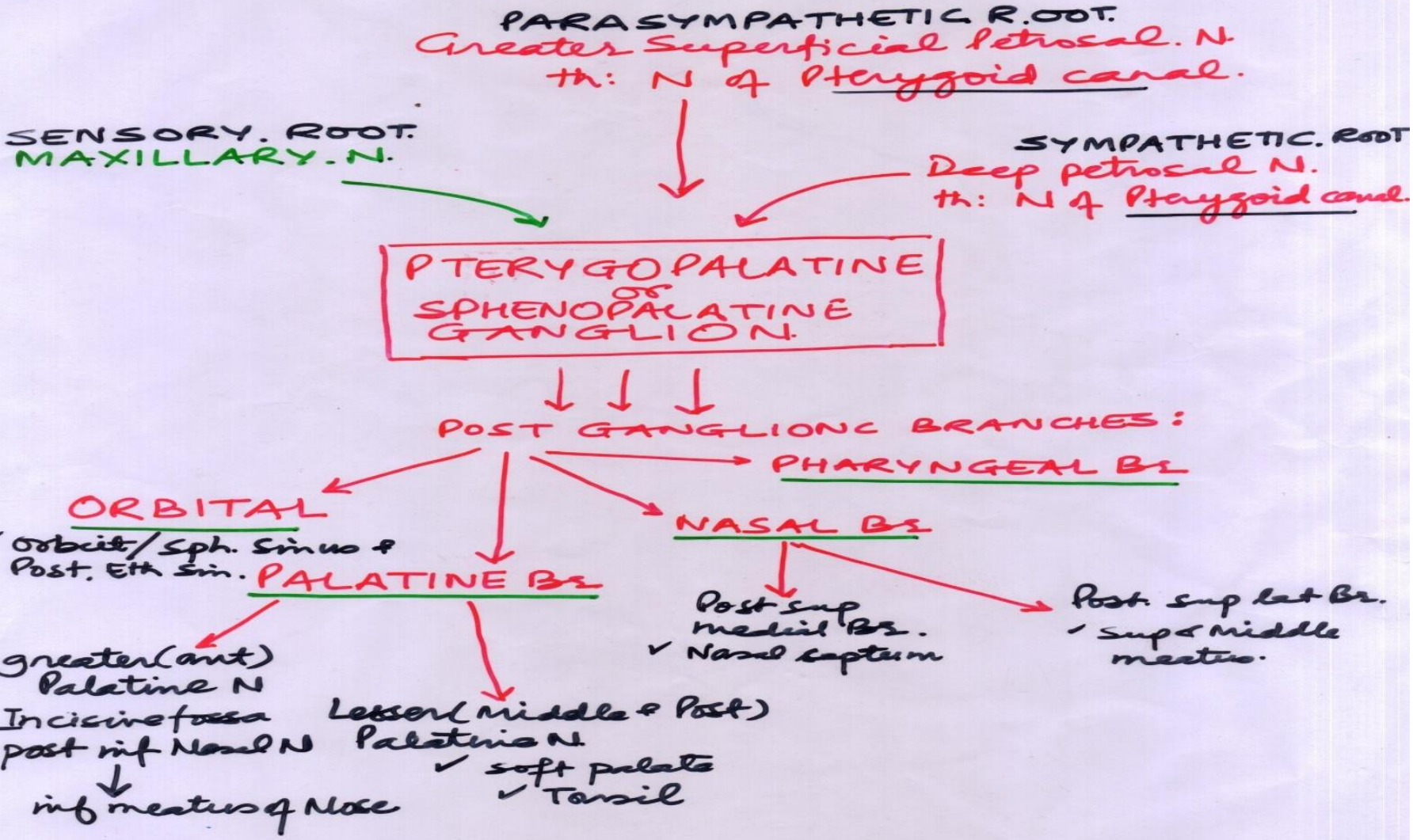
PTERYGO PALATINE GANGLION

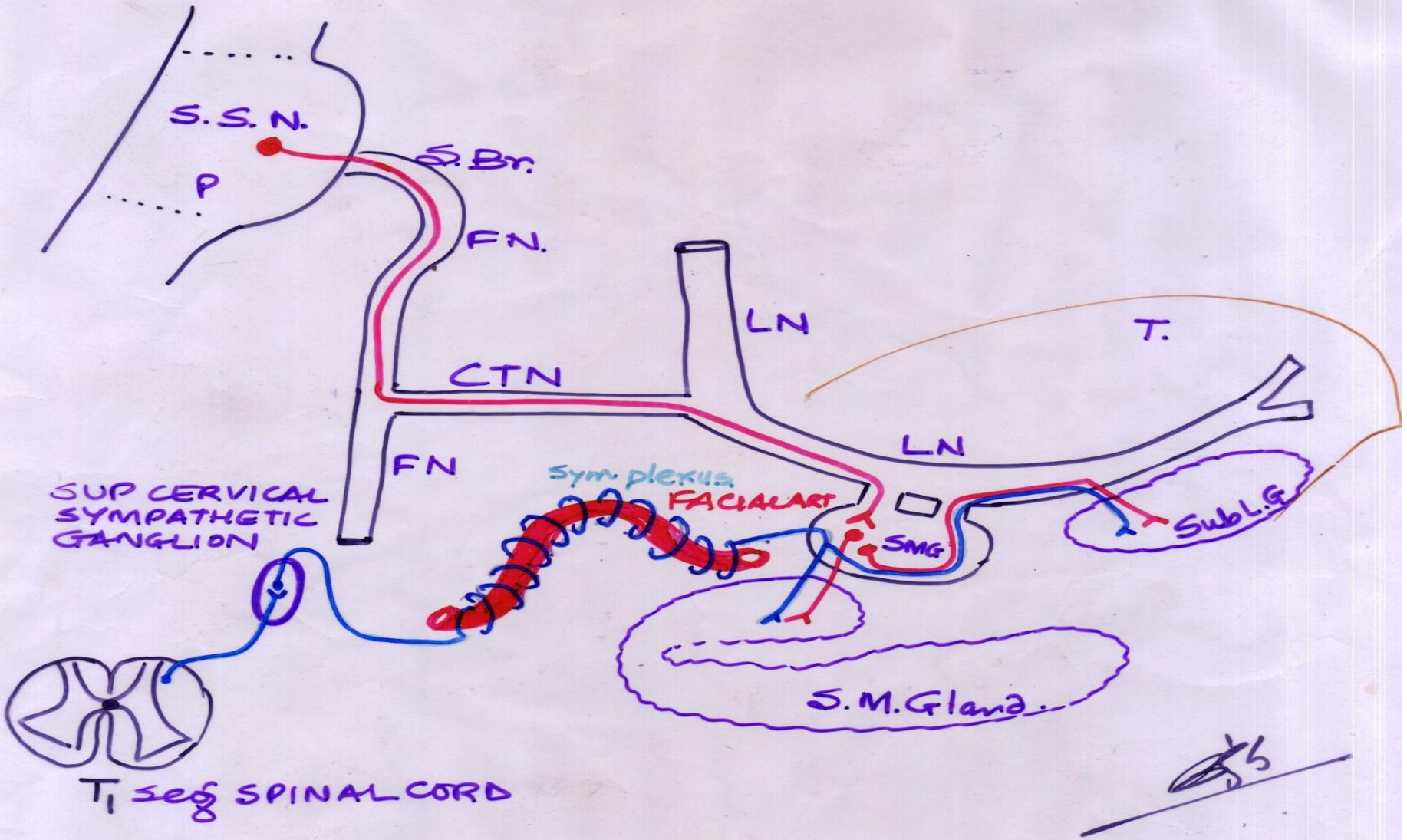
LACRIMAL GLAND

NS
↓
LACRIMAL NERVE.

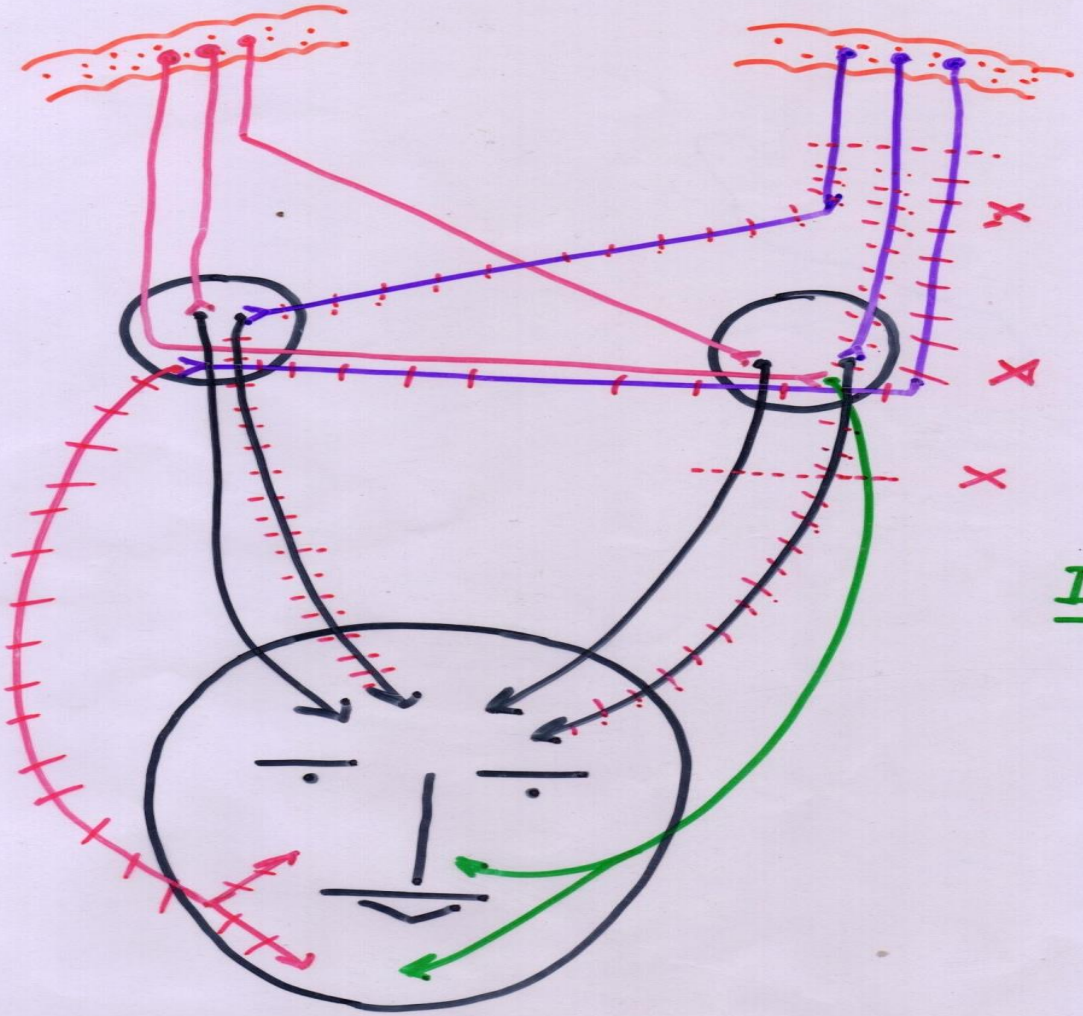
"PONS"
↓
special lacrimatory nu
↓
SENSORY ROOT- FACIAL NERVE
↓
GENICULATE GANGLION
↓
GREATER PETROSAL NERVE
↓
NERVE of PTERYGOID CANAL.
↓↓↓
PETRYGO PALATINE GANGLION
↓
Branch to Maxillary Nerve
↓
MAXILLARY NERVE
↓
ZYGO TEMPORAL NERVE
↓
ZYGOMATIC Branch
↓
LACRIMAL NERVE
↓
LACRIMAL GLAND

Topographically — MAXILLARY. N.
FUNCTIONALLY — 7th Cr. N.





"SUBMANIBULAR GANGLION"



Supra. Nu

Nuclear.

Infra Nuclear.

Supra Nu : Opp. Lower ½ Paralysed.

Nuclear : ∈ 6th ie INTERNAL squint ∈ LMN of Ipsilateral

Infra Nuclear : Ipsilateral Upper + Lower Complete face.

Facial palsy-S.N.Palsy.

- CVA-internal capsule - HT
- Cortico nuclear- cortico - bulbar fibers are involved
- Loss of movement of lower half of face on opposite side of lesion
- Upper half of face escapes b/of bilateral representation in cortex
- NUCLEAR PALSY-LMN type of palsy of same side upper & lower half with **ipsilateral 6th nerve palsy** ie internal squint– LR6

Facial nerve palsy

- **Millard Gubler syndrome -** contralateral *hemiplegia & ipsilateral facial palsy* b/of pontine lesion- affects pyramidal tract & facial nucleus.
- Infra nuclear palsy - bells palsy - **LMN** Palsy - same side complete face paralysis.
- Internal acoustic meatus- LMN Palsy & **deafness-8th cr n.**
- Lesion at genu – geniculate ganglion - *diminished lacrimation*

Facial nerve palsy

- & salivation by submandibular gland, hyperaccusis b/of stapedial muscle palsy , + LMN palsy same side.
- Facial canal- CTN – bell palsy &Taste loss of ant 2/3 tongue – clinically ??
- Crocodile tears - during recovery
- Stylomastoid foramen - **bells palsy**
- Bells phenomenon - while closing eye lids affected side eye rolls upward,
- Reaction to degeneration appears