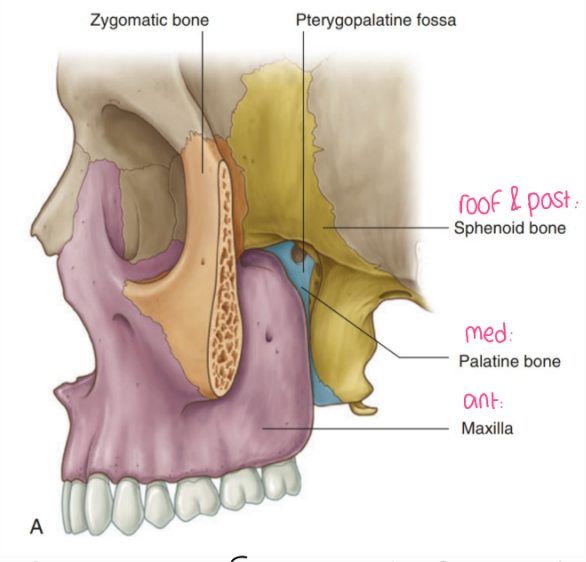
PTERYGOPALATINE FOSSA



* all nerves & blood supply of nose come from pterygopalatine fossa
* shape of pterygopalatine fossa: inverted teardrop
* walls:

anterior	posterior surface of maxilla
medial	palatine (lateral wall), has sphenopalatine foramen
posterior	pterygoid plate of sphenoid
roof	greater wing of sphenoid
lateral	infratemporal fossa

* 2 important foramena in sphenoid:

① foramen rotundum → maxillary nerve (pure sensory)
② pterygoid canal → nerve of pterygoid canal (symp. & parasymp.):
↳ parasymp (greater petrosal nerve, part of facial nerve) → preganglionic, synapse in pterygopalatine ganglia
↳ symp (deep petrosal) → post ganglionic (no synapse in ganglion)

canal path: from middle cranial fossa as a groove then goes to roof of foramen lacerum & makes a groove in its cartilage to reach pterygopalatine fossa)

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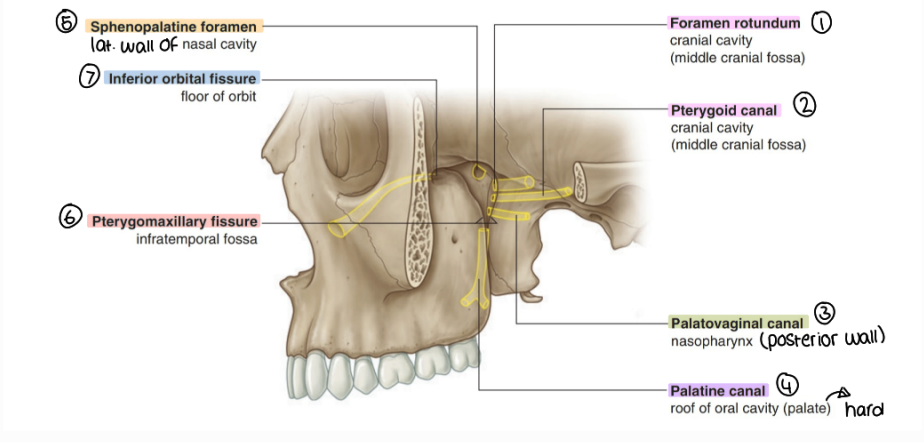
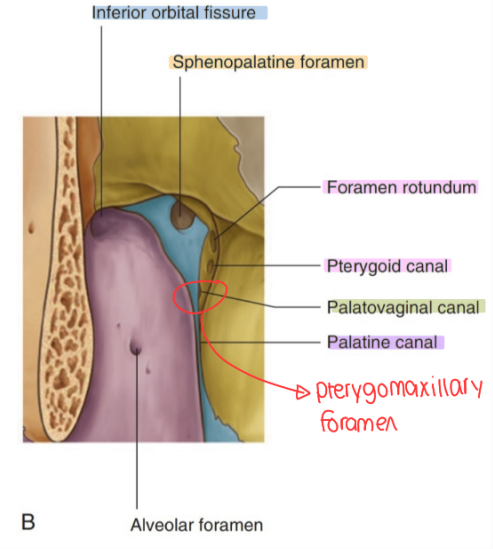
* gateways bet. pterygopalatine fossa & surrounding areas (7 foramena & fissures)





- palatine canal then opens inferiorly into greater & lesser palatine foramina / palatine artery & nerve divide into greater & lesser artery & nerve → each pass through its foramen (direction: artery → upward / nerve → downward)
- maxillary A direction: infratemporal → pterygopalatine (opposite to N)
- maxillary N & A pass from pterygopalatine fossa to orbital cavity floor then groove & canal to exit infraorbital foramen

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* Contents of pterygopalatine fossa

① maxillary nerve
- sensory → upper teeth, skin of facial, temporal
- reaches fossa from mid cranial fossa through foramen rotundum

② terminal part of maxillary artery
- ECA → maxillary (in parotid gland) → terminal branch (medial to infratemporal fossa), at lateral pterygoid muscle in pterygopalatine fossa it gives: sphenopalatine / palatine / nasopharynx / orbital

③ nerve of pterygoid canal: has symp. & parasymp.

④ pterygopalatine ganglion
- parasymp. ganglia → synapse
- symp → without synapse to nasal glands, orbit & oral cavity

⑤ veins & lymphatics

* pterygopalatine ganglia

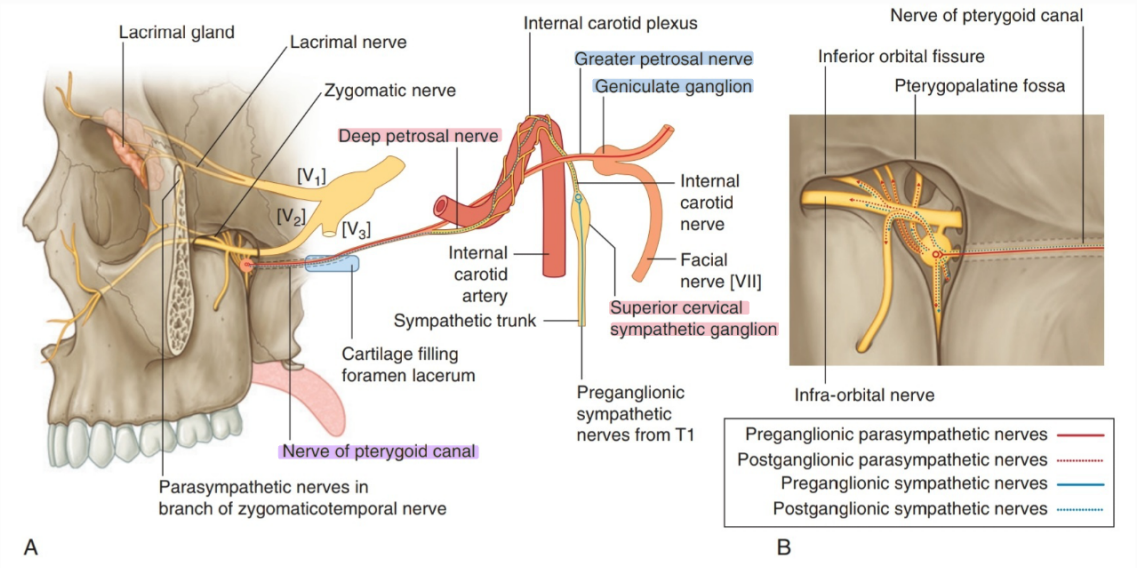

Fig. 8.157 Nerve of the pterygoid canal. **A.** Overview. **B.** In relationship to the pterygopalatine ganglion.

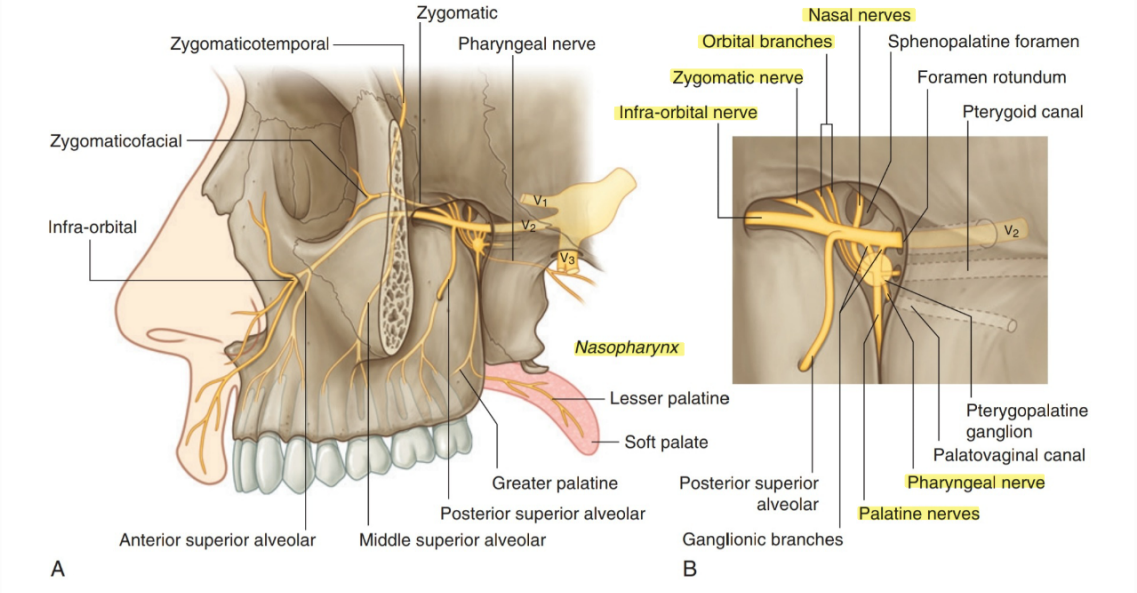

Fig. 8.156 Maxillary nerve [V_2]. **A.** Terminal branches. **B.** In relationship to the pterygopalatine ganglion.

- 4 parasymp. ganglia in head & neck: optic, submandibular, ciliary, pterygopalatine (largest)
- Sympathetic (post ganglionic) → X Synapse

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* more about infraorbital nerve (didn't fit in the next page :)

leaves pterygopalatine fossa through inferior orbital fissure → infraorbital groove in the floor of orbit → continues & exits through infraorbital foramen as infra orbital nerve

gives

- Anterior Superior Alveolar Nerve (Supply incisors & canine / gives a small nasal branch)
- Middle Superior alveolar nerve (Supply premolars & maxillary sinus)

Join Superior Alveolar plexus to Supply upper teeth

gives branches:

- nasal (for skin of lateral aspect of external nose & part of septum)
- palpipral (for skin of lower eyelids
- Sup. labial (for skin over cheek & upper lip & related

* NERVES IN PTERYGOPALATINE FOSSA

(PARASYMPATHETIC)

Facial N → Geniculate Ganglia → Great petrosal (preganglionic)

(SYMPATHETIC)

Cervical Sympathetic Ganglia → fibers pass around ICA → deep petrosal

Nerve of pterygoid Canal (passes through it) → reach Pterygopalatine Ganglia

Give branches to: palatine, nasal cavity, nasopharynx, Orbit

Some fibers pass superiorly through ganglionic branches
① Symp → blood vessels
② parasymp → Secretomotor (nasal & oral cavity, nasopharynx)

Maxillary N (details below!)

enter maxillary trunk

gives sensory fibers & 2 branches to ganglia (carries inflammation sensation to ganglia

Pharyngeal
- palatovaginal Canal
- Secretomotor

palatine
- palatine Canal (to oral cavity)
  - **greater**
    - anterior
    - to hard palate
    - ↓
    - incisive foramen
    - ↓
    - nose
  - **lesser**
    - middle, posterior
    - to soft palate

Nasal (7 nerves)
- Sphenopalatine foramen
  - **Short Sphenopalatine**
    - post. Sup. lateral Nasal
    - post. Sup. quadrant mucosa
  - **long Sphenopalatine**
    - nasopalatine
    - largest
    - passes ant & down the Septum
    - ↓
    - incisive Canal
    - ↓
    - mucosa, gingiva, glands of incisors

joins greater palatine

Orbital
- inf. Orbital fissure
- to periosteum, (orbital wall), lacrimal gland, Sphenoidal & ethmoidal air sinuses

Zygomatic
- Symp & parasymp. fibers join zygomatic branch of maxillary
  - Zygomaticofacial
  - Zygomaticotemporal
    - gives branches to lacrimal gland

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trigeminal ganglion (in cranial cavity) gives V_2 branch (maxillary N) → exits mid cranial fossa & enter pterygopalatine fossa (through foramen rotundum)

Infra Orbital nerve (through inf. Orbital canal)
- nasal
- palpebral
- Sup. labial

meningeal branch

2 ganglionic branches (pass through pterygopalatine ganglion / post ganglionic para Symp.)

Zygomatic (goes to infra Orbital fissure)
- **Zygomaticofacial** (opens on anterolat. surface of zygomatic bone (for skin)
- **Zygomaticotemporal** (enter temporal fossa)
  - Superficial (for skin)
  - joins lacrimal N (to lacrimal gland)

Some fibers pass laterally to infratemporal fossa (through pterygomaxillary fissure) to give **posterior superior alveolar N** (for last 3 molars, buccal gingivae / maxillary sinus)

* ARTERIAL SUPPLY (maxillary artery)

1st part
- before lateral pterygoid muscle
- boundaries:
  - laterally → neck of mandible
  - medially → sphenomandibular ligaments
  - superiorly → auriculotemporal nerve
  - inferiorly → maxillary vein

2 main:

middle meningeal artery
- upwards to middle cranial fossa through foramen spinosum

inferior alveolar artery
- downwards along mandible through mandibular foramen
- supplies lower jaw (teeth)

3 small:

① accessory middle meningeal (through foramen ovale)

②+③ deep auricular & anterior tympanic arteries (to ear)

2nd part (muscular artery)
- anterior or posterior to lateral pterygoid muscle
- supplies muscles of mastication: masseter, temporalis, medial & lateral pterygoid
- course with branches of mandibular nerve

3rd part
- in pterygopalatine fossa anterior to ganglion
- its branches run with maxillary nerve branches & pterygopalatine ganglion
- supplies nasal cavity, roof, oral cavity & upper teeth, sinuses, oropharynx, floor of orbit

posterior superior alveolar
- to upper molar, premolar, gingiva, maxillary sinus
- originates in pterygomaxillary fissure → runs with the post. sup. alveolar N on the infratemporal surface of maxilla

infraorbital (in the orbit) & gives:
- ↳ middle superior alveolar
- ↳ anterior superior alveolar (for incisors & canine)
- ↳ branches near orbital floor (for inf. rectus, oblique, lacrimal)

greater & lesser palatine (to oral cavity)

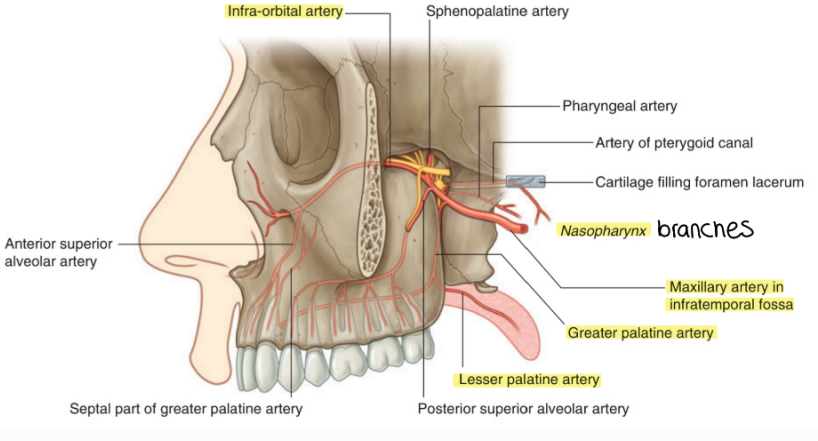
pharyngeal branches
- travels posteriorly & leaves pterygopalatine fossa through palatovaginal canal with pharyngeal nerve
- supplies posterior part of nasal cavity, roof, sphenoid sinus, pharyngeotympanic tube

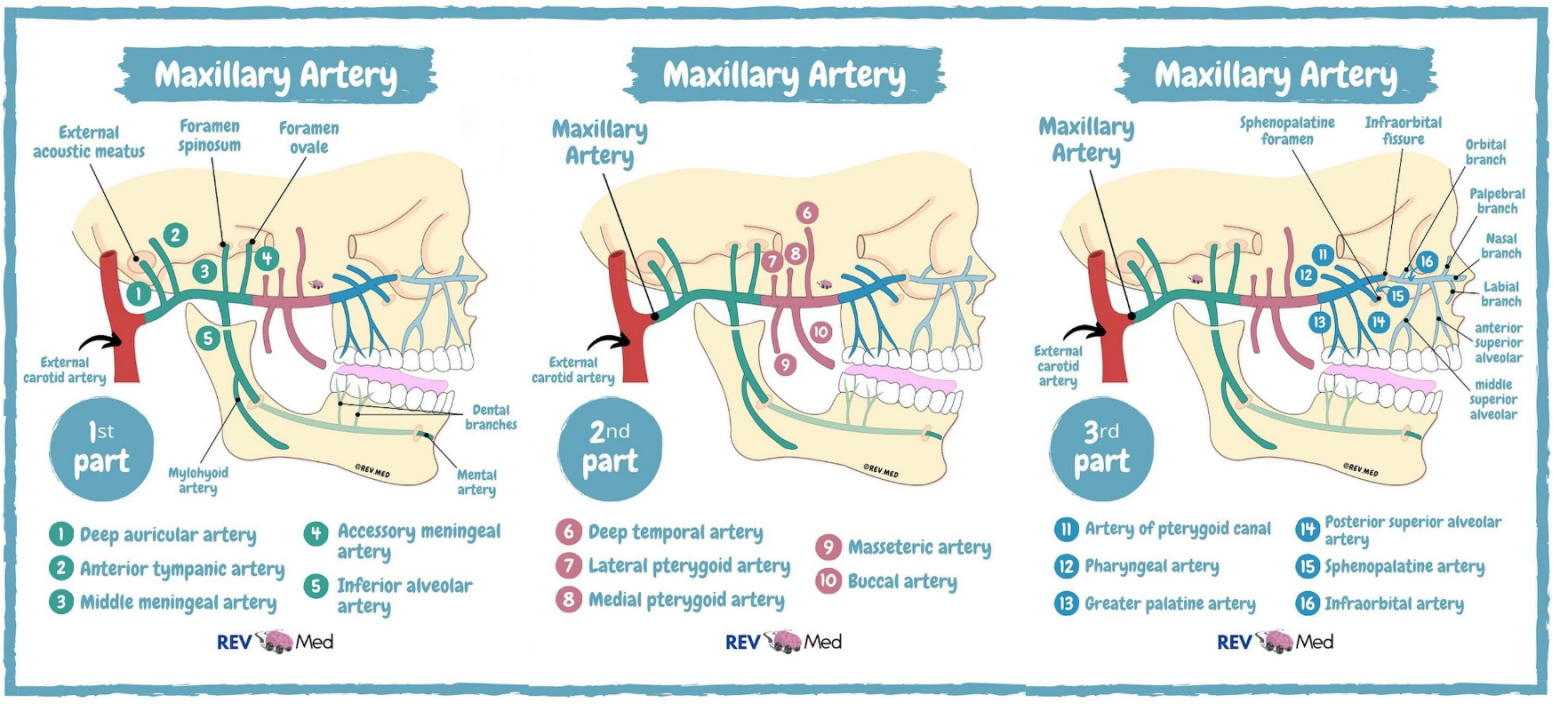
artery of pterygoid canal
- passes posteriorly into canal & supplies surrounding tissue
- passes inferiorly through cartilage of foramen lacerum & terminates in nasopharynx mucosa

sphenopalatine artery (nasopalatine)
- in pterygo palatine fossa enters nasal cavity medially through sphenopalatine foramen

long sphenopalatine (post. septal nasal branch)
- main supply to septum & supplies some of lateral wall
- passes anteriorly in septum & anastomose with greater palatine

short sphenopalatine (post. lat. nasal branches)
- supplies lateral wall of nose & sinuses





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* VENOUS DRAINAGE

① pterygoid & anterior part of face

mainly by infraorbital vein → facial vein

② posterior aspect

lateral pterygoid plexus → maxillary vein (in parotid gland) → retromandibular vein

- generally veins travel with maxillary arteries back to pterygopalatine fossa
- coalesce in fossa then pass laterally through pterygomaxillary fissure to join pterygoid plexus in infratemporal fossa
- the infraorbital vein drains the inferior aspect of orbit, then may directly pass into infratemporal fossa (bypassing pterygopalatine fossa)

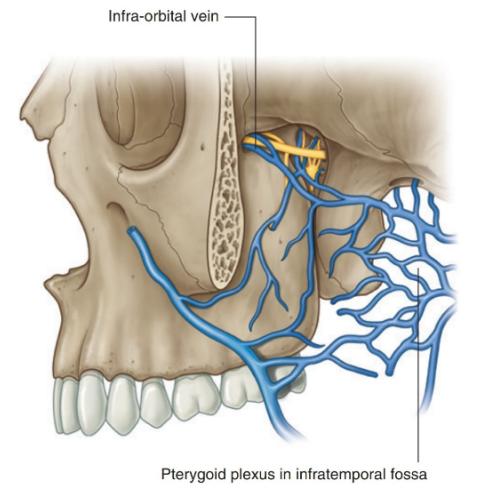

Fig. 8.159 Veins of the pterygopalatine fossa.

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