

I. By Structure: What Supplies Each Structure

A. External Nose & Upper Lip

- **Blood Supply:**
 - "Branches of the ophthalmic... and the maxillary arteries."
 - "ala and the lower part of the septum by branches from the facial artery (branch of the external carotid artery) which supplies the face and upper lip as well."
 - "The superior labial artery, which is a branch of the facial artery, supplies the upper lip and the anterior part of the nasal septum."
 - "the infraorbital artery... gives lateral nasal branches that supply the external nose."
- **Nerve Supply:**
 - "Ophthalmic nerve... gives rise to the external nasal branch... and Infratrocchlear Nerve."
 - "Maxillary nerve... gives rise to the infraorbital nerve. The terminal branches of the infraorbital nerve supply: Upper lip (labial branch), Lower part of the nose (nasal branch), Lower eyelid (palpebral branch)."

B. Nasal Cavity (Lateral Wall & Septum)

- **Blood Supply:**
 - **Lateral Wall (Upper Part):** "Short sphenopalatine artery → supplies upper lateral wall (upper lateral quadrant)."
 - **Lateral Wall (Anterior Inferior Part):** "Greater palatine artery... Supplies the anterior inferior part of the lateral wall of the nose."
 - **Lateral Wall (Anterior Superior Part):** "Anterior Ethmoidal Artery... Supplies: ...Anterior superior part of the lateral wall."
 - **Lateral Wall (Posterior Superior Part):** "Posterior Ethmoidal Artery... Supplies: Posterior superior parts of the... lateral wall."
 - **Septum:** "Long sphenopalatine artery → supplies nasal septum (medial wall)."
 - **Septum (Anterior Part):** "The superior labial artery... supplies... the anterior part of the nasal septum."

- **Septum (Anterior Superior Part):** "Anterior Ethmoidal Artery... Supplies: Anterior superior part of the nasal septum (medial wall)."
- **Septum (Posterior Superior Part):** "Posterior Ethmoidal Artery... Supplies: Posterior superior parts of the septum."
- **Nerve Supply:**
 - **Sensory:** "Ophthalmic nerve (V1)... Gives rise to the anterior and posterior ethmoidal nerves." "Maxillary nerve (V2)... Gives rise to the long sphenopalatine (nasopalatine) nerve, and the greater and lesser palatine nerves."
 - **Parasympathetic (Glands):** "Parasympathetic secretomotor fibers supplying the nasal glands originate from the facial nerve (VII) pass through the greater petrosal nerve to the pterygopalatine ganglion, and then reach the glands to stimulate secretion."
 - **Olfaction:** "Olfactory nerve (I)... Originates from bipolar cells in the olfactory region. Passes as filaments through the cribriform plate to reach the olfactory epithelium."

C. Hard and Soft Palate

- **Blood Supply:**
 - **Hard Palate:** "Greater palatine artery... Supplies the hard palate."
 - **Soft Palate:** "Lesser palatine artery... Supplies the soft palate."
- **Nerve Supply:**
 - "Maxillary nerve (V2)... Gives rise to the... greater and lesser palatine nerves."

D. Lacrimal Gland

- **Nerve Supply:**
 - "Zygomaticotemporal branch... carries post ganglionic parasympathetic fibers to the lacrimal nerve."
 - "Orbital branches: ...Supply... lacrimal gland."

E. Paranasal Sinuses

- **Maxillary Sinus Nerve Supply:** "Innervated by infraorbital nerve."

- **Frontal Sinus Nerve Supply:** "Innervated by branches of the supra-orbital nerve from the ophthalmic nerve."
- **Sphenoidal Sinus Nerve Supply:** "Innervated by Posterior ethmoidal branch of the ophthalmic nerve (V1) & Maxillary nerve (V2) via the orbital branches."
- **Ethmoidal Sinuses Nerve Supply:** "Innervated by the anterior and posterior ethmoidal branches."

F. Teeth and Gingiva (Upper Jaw)

- **Posterior Superior Alveolar Nerve/Artery:** "Supplies the molar teeth and adjacent buccal gingivae... contributes to the supply of the maxillary sinus." / "Supplies the molar and premolar teeth, adjacent gingiva, and the maxillary sinus."
- **Infraorbital Artery branches:** "In the orbital canal it gives rise to 2 branches 1- Middle superior alveolar 2- Anterior superior alveolar Which supplies the premolars, Anterior canine and incisors."

G. Nasopharynx

- **Pharyngeal Nerve/Artery:** "Supply the mucosa of the nasopharynx posteriorly." / "Pharyngeal, reaches the nasopharynx through the palatovaginal foramen."

H. Temple and Cheek Skin

- **Zygomaticotemporal Nerve:** "supplies skin over the temple."
- **Zygomaticofacial Nerve:** "supplies the adjacent skin [over the zygomatic bone]."

I. Pterygoid Canal

- **Artery of Pterygoid Canal:** "supplies the canal and its structures. Terminates in the mucosa of the nasopharynx."

II. By Vessel/Nerve: What It Supplies

A. Arteries

1. **Maxillary Artery (from External Carotid):** "Terminal part" is in the pterygopalatine fossa (PPF).
 - **Sphenopalatine Artery (Terminal branch):**
 - **Short:** "supplies upper lateral wall (upper lateral quadrant)."

- **Long:** "supplies nasal septum (medial wall)."
- **Palatine Artery:**
 - **Greater Palatine:** "Supplies the hard palate." "...Supplies the anterior inferior part of the lateral wall of the nose."
 - **Lesser Palatine:** "Supplies the soft palate."
- **Infra-orbital Artery (Terminal branch):**
 - Gives 3 terminal branches: Palpebral, nasal, and labial.
 - "gives lateral nasal branches that supply the external nose."
 - In the orbital canal: "gives rise to 2 branches 1- Middle superior alveolar 2- Anterior superior alveolar."
- **Posterior Superior Alveolar Artery:** "Supplies the molar and premolar teeth, adjacent gingiva, and the maxillary sinus."
- **Pharyngeal Artery:** "reaches the nasopharynx through the palatovaginal foramen."
- **Artery of the Pterygoid Canal:** "supplies the canal and its structures. Terminates in the mucosa of the nasopharynx."

2. **Ophthalmic Artery (from Internal Carotid):**

- **Anterior Ethmoidal Artery:**
 - "Supplies: Anterior superior part of the nasal septum (medial wall), Anterior superior part of the lateral wall."
 - "Terminates as the external nasal artery, supplying the external nose."
- **Posterior Ethmoidal Artery:**
 - "Supplies: Posterior superior parts of the septum and lateral wall."

3. **Facial Artery (from External Carotid):**

- "Branches... supply the face and upper lip as well."
- **Superior Labial Artery:** "supplies the upper lip and the anterior part of the nasal septum."

B. Nerves

1. **Ophthalmic Nerve (V1 - Sensory):**

- **External Nasal branch (of Anterior Ethmoidal):** Supplies external nose.
- **Infratrochlear Nerve:** Supplies external nose.
- **Anterior & Posterior Ethmoidal Nerves:** Supply nasal cavity.
- **Supra-orbital Nerve:** "branches... innervated frontal sinuses."

2. **Maxillary Nerve (V2 - Sensory):** Enters PPF via foramen rotundum.

- **Twigs:** "supply the ganglia- pterygopalatine ganglion."
- **Zygomatic Nerve:**
 - **Zygomaticotemporal:** "supplies skin over the temple" and "carries post ganglionic parasympathetic fibers to the lacrimal nerve."
 - **Zygomaticofacial:** "supplies the adjacent skin."
- **Posterior Superior Alveolar Nerve:** "Supplies the molar teeth and adjacent buccal gingivae... contributes to the supply of the maxillary sinus."
- **Infra-orbital Nerve (Terminal branch):** Terminates as palpebral, nasal, labial branches.
- **Branches distributed via PPF Ganglion:**
 - **Long Sphenopalatine (Nasopalatine):** Supplies nasal septum.
 - **Greater & Lesser Palatine Nerves:** Supply hard and soft palate.
 - **Short Sphenopalatine Nerves:** Supply upper posterior quadrant of nasal cavity.
 - **Pharyngeal Nerve:** "Supply the mucosa of the nasopharynx posteriorly."
 - **Orbital Branches:** "Supply of the orbital wall (periosteum) and lacrimal gland. Supply the sphenoidal and ethmoidal sinuses."

3. **Facial Nerve (VII):**

- **Greater Petrosal Nerve:** Carries preganglionic parasympathetic fibers to PPF ganglion for nasal/lacrimal gland secretion.

4. **Olfactory Nerve (I):**

- "Provides sensory fibers from the roof of the nasal cavity."

5. **Nerve of the Pterygoid Canal:**

- Carries preganglionic parasympathetic (from Greater Petrosal) and postganglionic sympathetic (from Deep Petrosal) fibers to PPF.

C. Venous Drainage

1. **Anterior part of nasal cavity:** "Facial vein... Joins the common facial vein → internal jugular vein."
2. **Posterior / superior part of nasal cavity:** "Pterygoid venous plexus... Located near lateral pterygoid muscles... Drains into maxillary vein → passes through parotid gland."
3. **PPF Veins:** "Drain areas supplied by the arteries... pass posteriorly to join the pterygoid plexus of veins in the infratemporal fossa."

D. Lymphatic Drainage

1. **Anterior part of nasal cavity:** "drains into the submandibular lymph nodes."
2. **Superior & posterior part of nasal cavity:** "drains into the retropharyngeal lymph nodes or directly to the deep cervical lymph nodes."
3. **PPF Lymphatics:** "Veins and lymphatics also pass through the pterygopalatine fossa."
4. **Ultimate Drainage:** "all lymph from the nasal cavity eventually drains into the deep cervical lymph nodes."