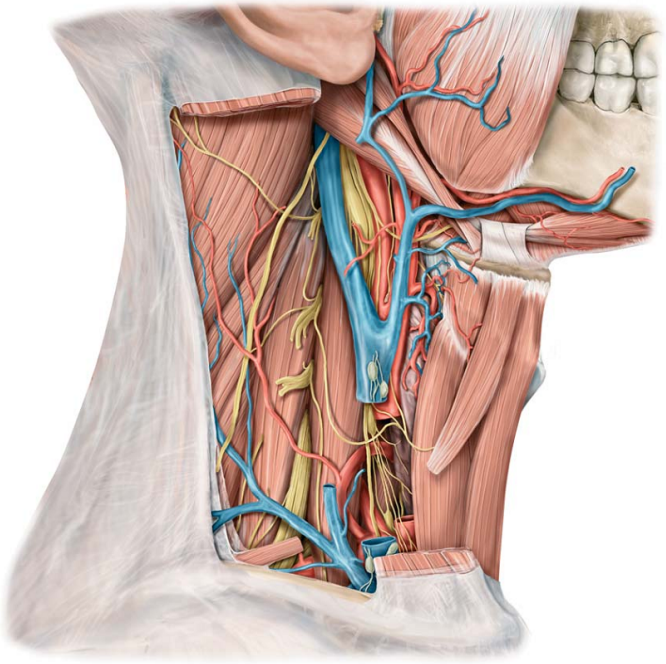
Deep structures of the neck





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Gross Anatomy of Head & Neck in Dentistry

Learning objectives

After the class, students will be able to

1. **Indicate the boundaries of each triangle in the neck**
2. **Identify the major contents of each triangle in the neck**
3. **Describe the relationship of deep cervical fascia and structures of the neck**
4. **Apply the knowledges in microanatomy, physiology and dentistry**

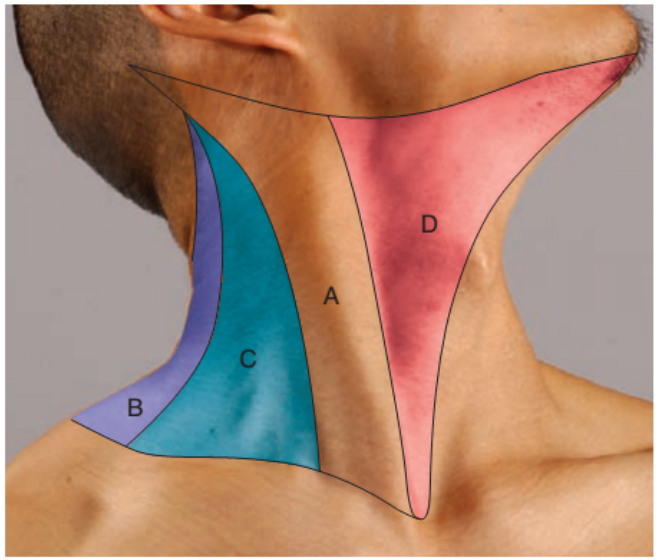
Outlines of lecture

1. Anterior triangles of the neck
    1) Submental triangle
    2) Submandibular triangle
    3) Carotid triangle
    4) Muscular triangle

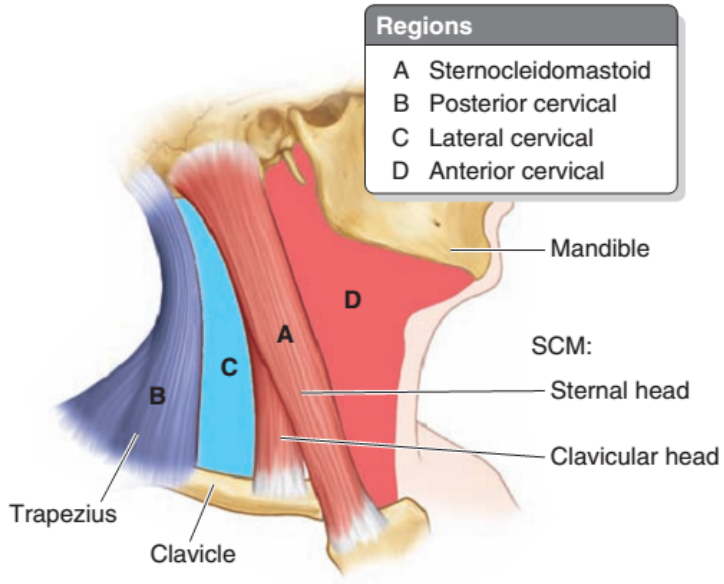
2. Posterior triangles of the neck
    1) Occipital triangle
    2) Subclavian triangle

3. Deep cervical fascia & Fascial spaces

Region & Triangles of the neck



(A) Anterolateral view

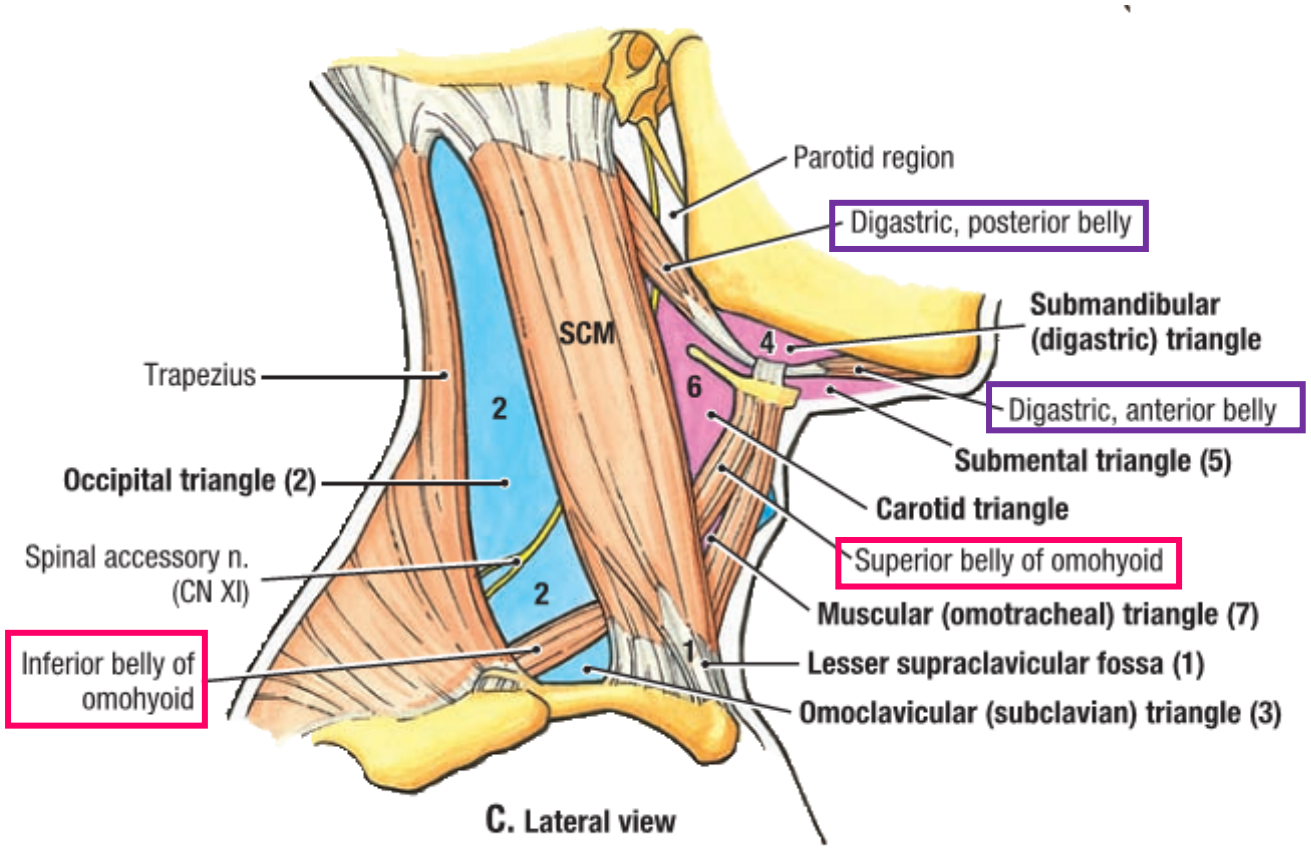


(B) Lateral view

- SCM region
- Posterior cervical region (Trapezius region)

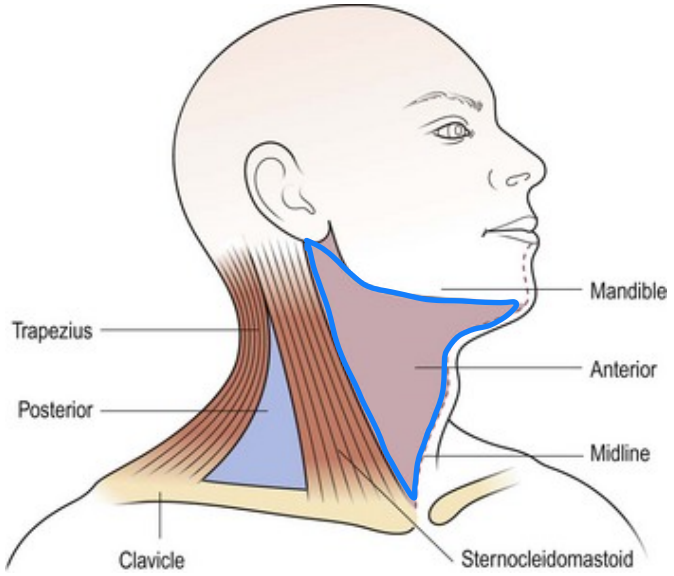
- Anterior cervical region (Anterior triangle of the neck)
- Lateral cervical region (Posterior triangle of the neck)

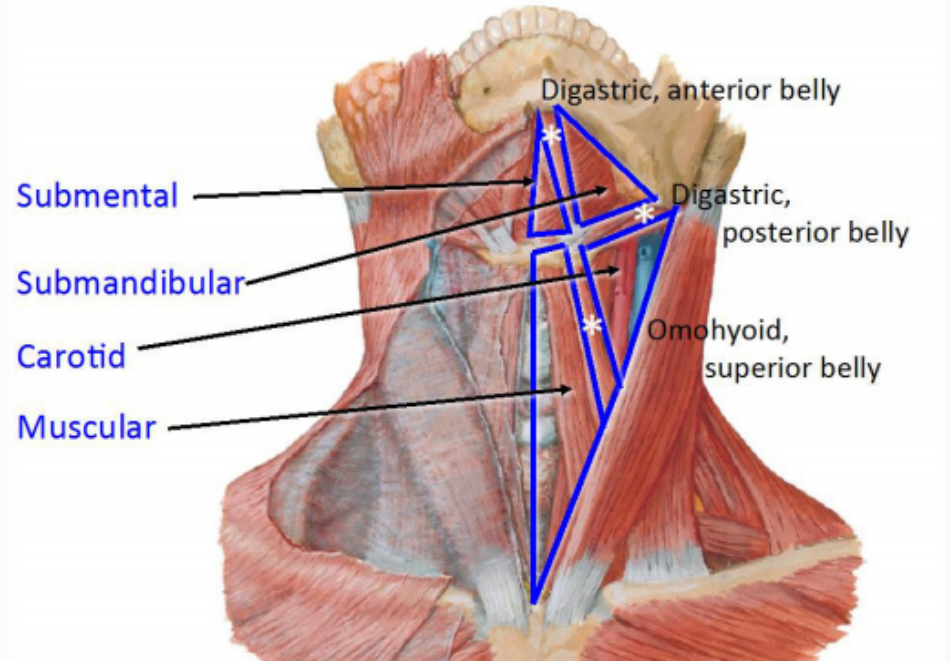
Triangles of the neck



- **SCM**
  - **divide anterior & posterior triangles**
- **Digastric & Omohyoid muscles**
  - **subdivide anterior & posterior triangles**

Anterior triangles of neck

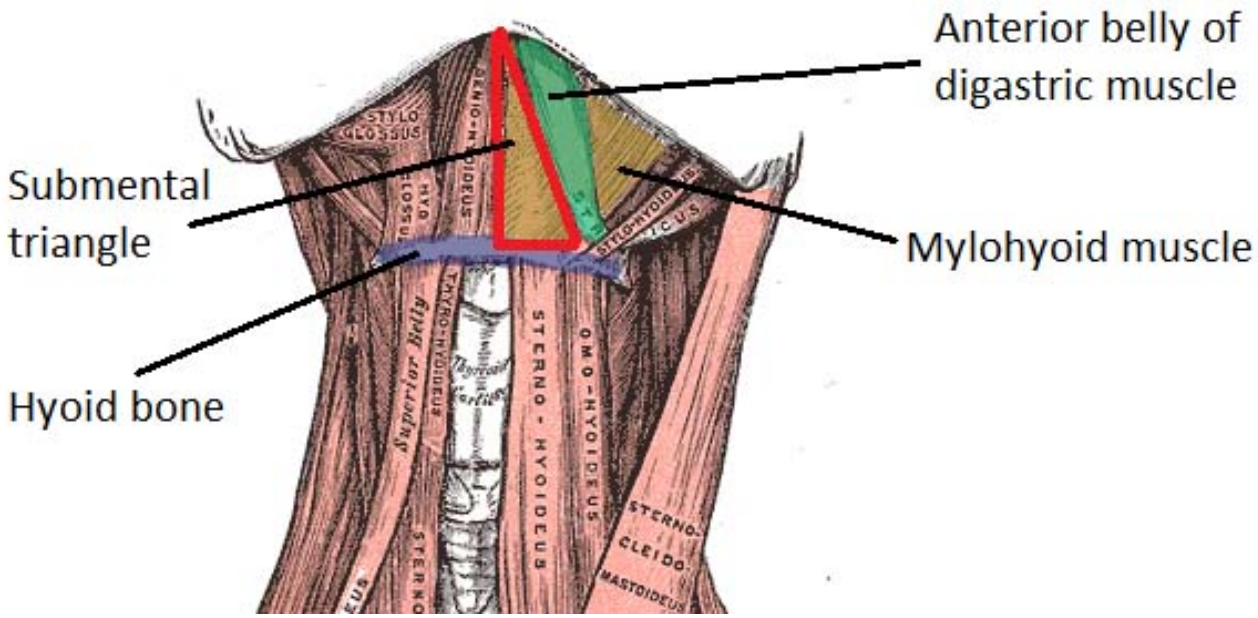




Boundaries

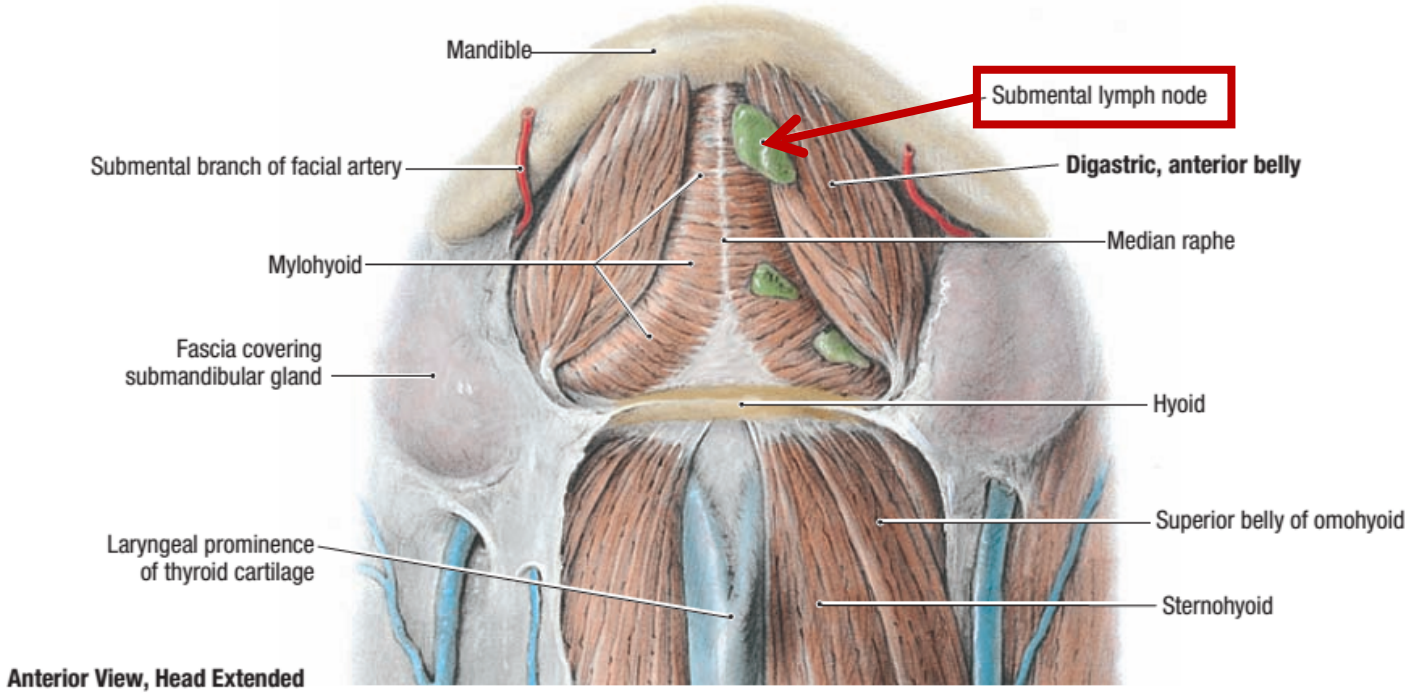
- **Superior: inferior border of mandible**
  angle of mandible
  mastoid process
- **Anterior: anterior midline of neck**
- **Posterior: anterior border of SCM**
- **Apex: sternum**

Submental triangle

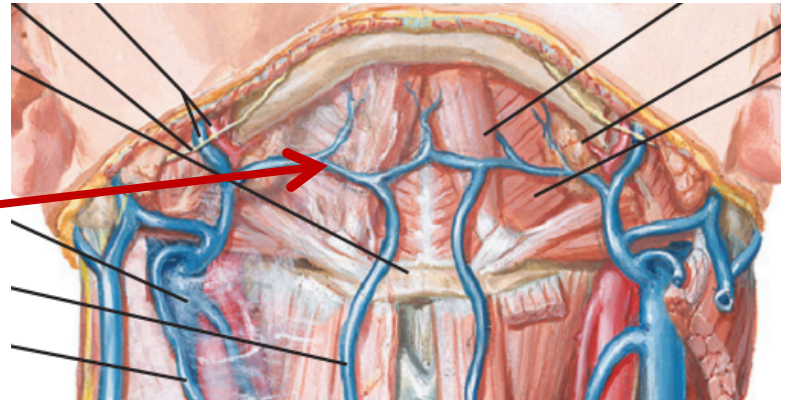


- **Boundaries:**
  - **Anterior midline of neck**
  - **Body of hyoid bone**
  - **Anterior belly of digastric muscle**
- **Floor:**
  - **Mylohyoid muscle**

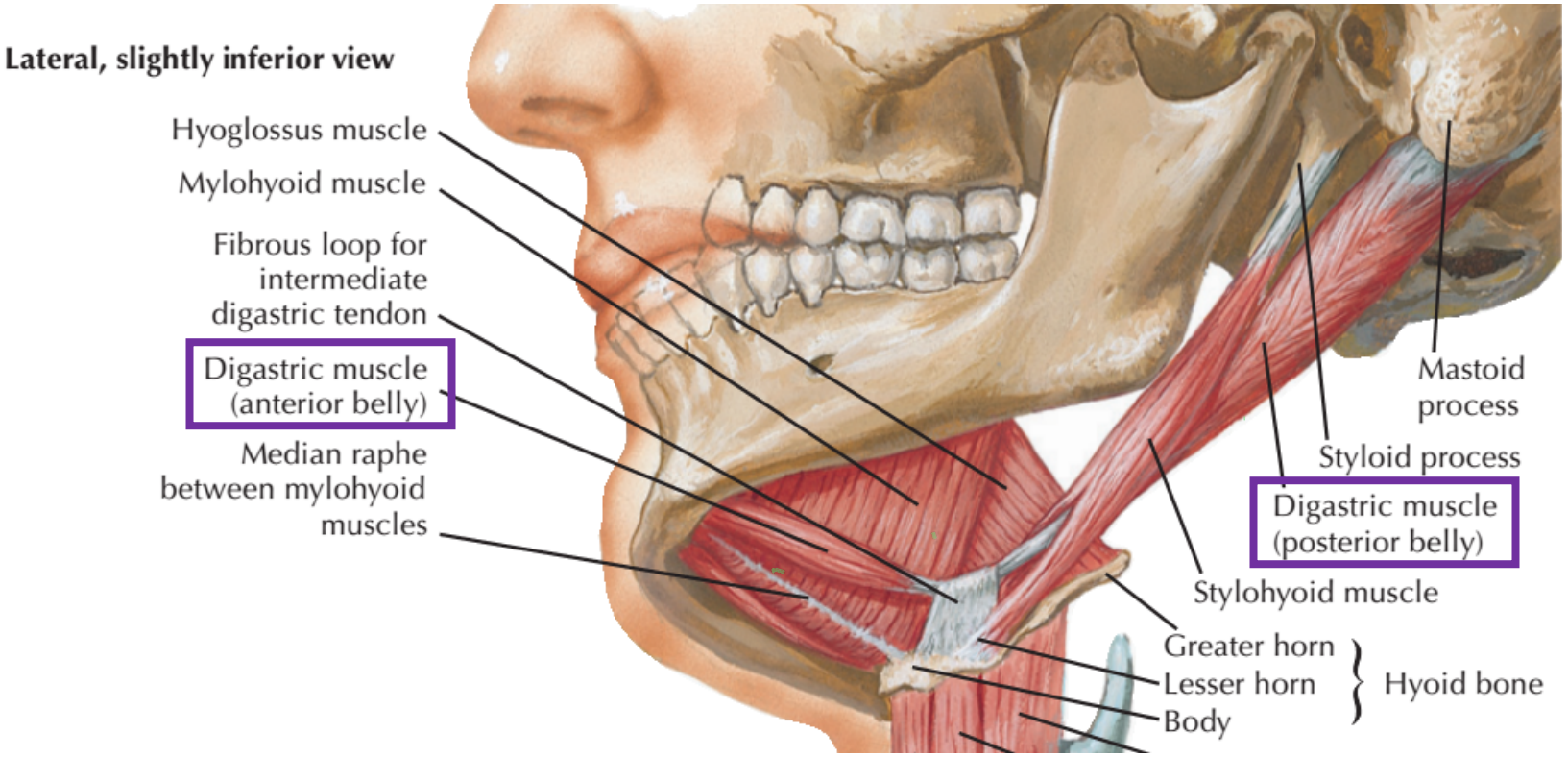
Submental triangle



- **Major contents:**
  - **Submental lymph nodes**
  - **Anterior jugular vein**

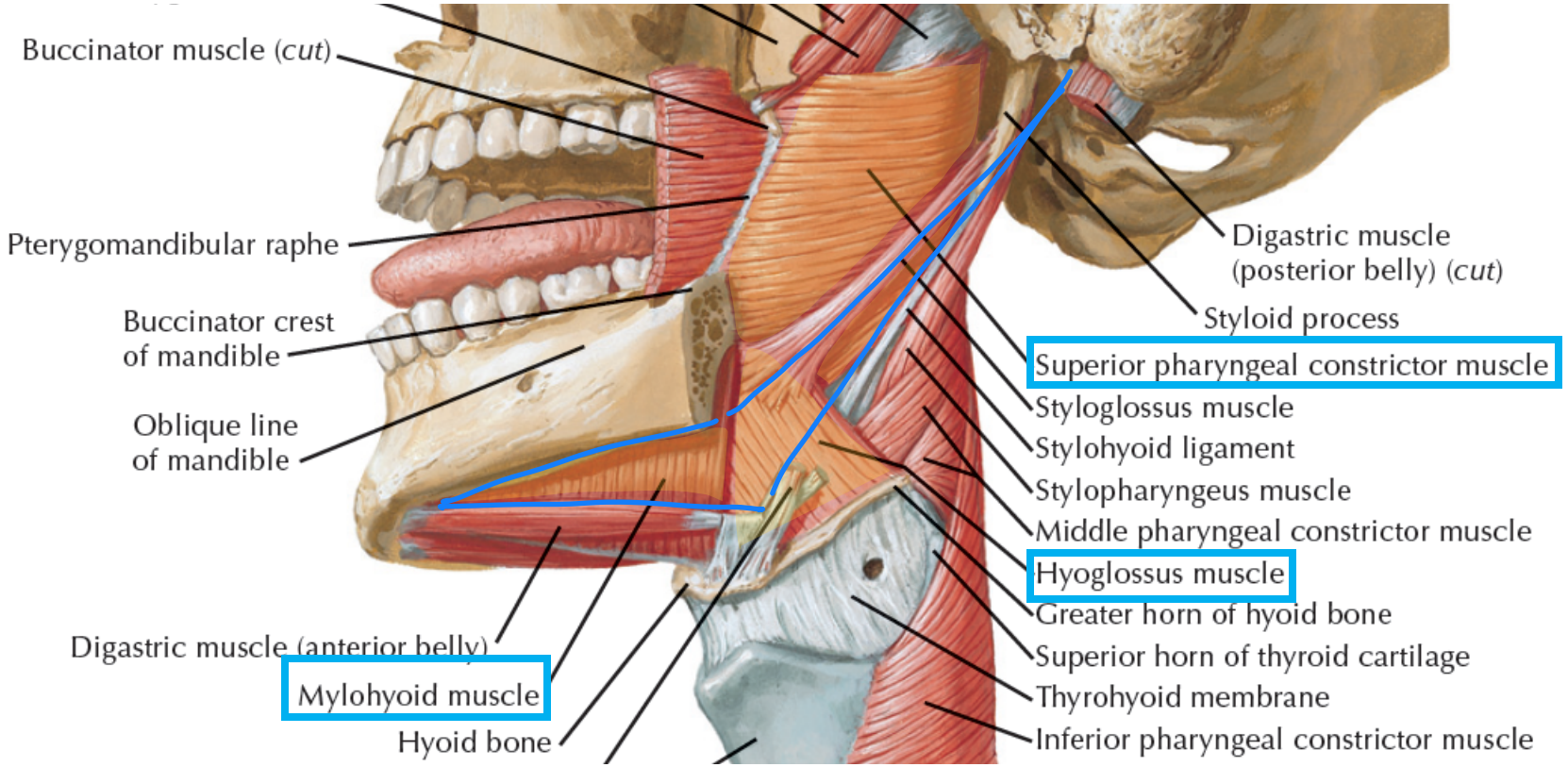


Submandibular triangle

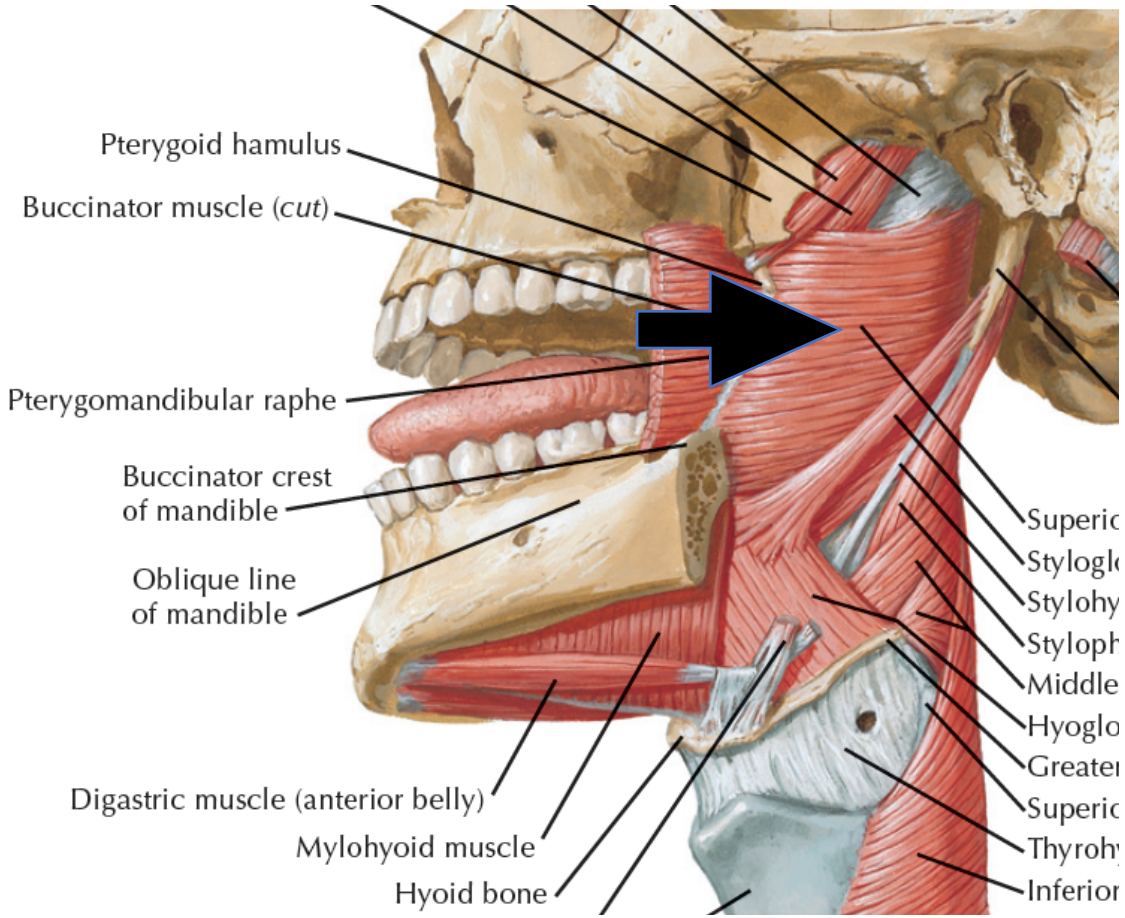


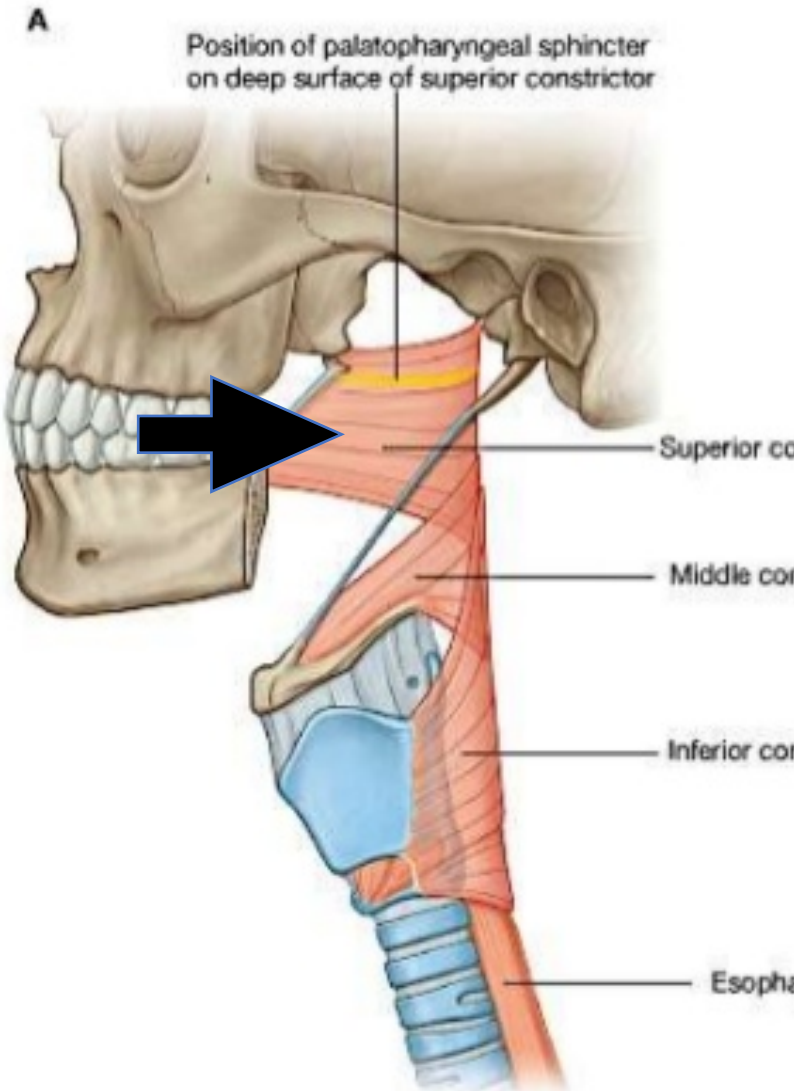
- **Boundaries:**
  - **Inferior border of mandible**
  - **Line b/w angle of mandible & mastoid process**
  - **Anterior & Posterior bellies of digastric muscle**

Submandibular triangle

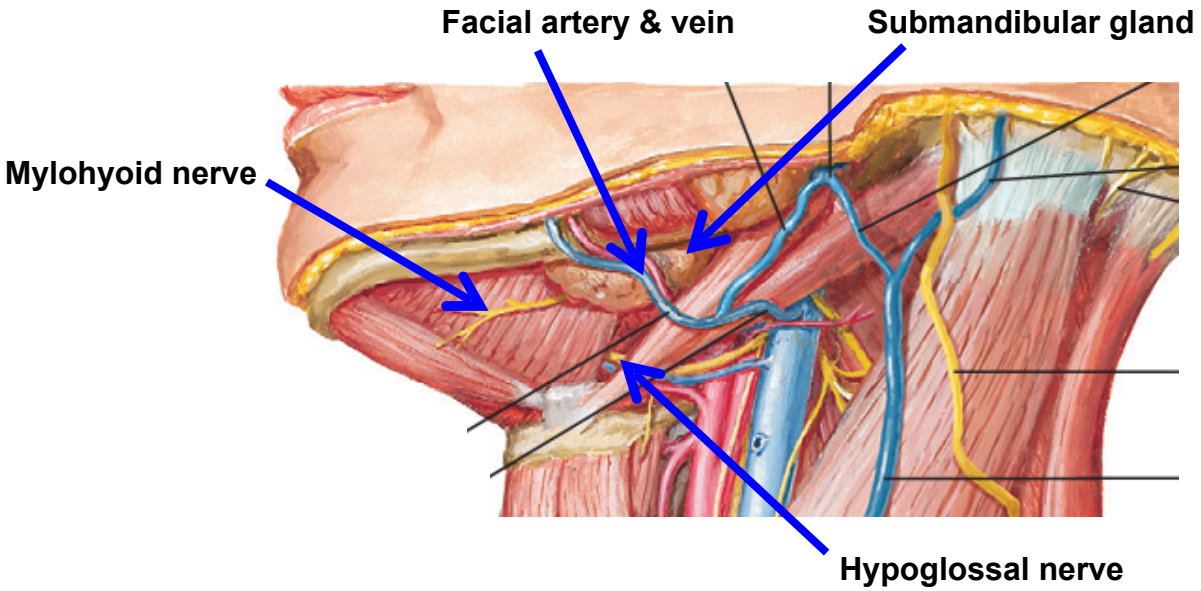


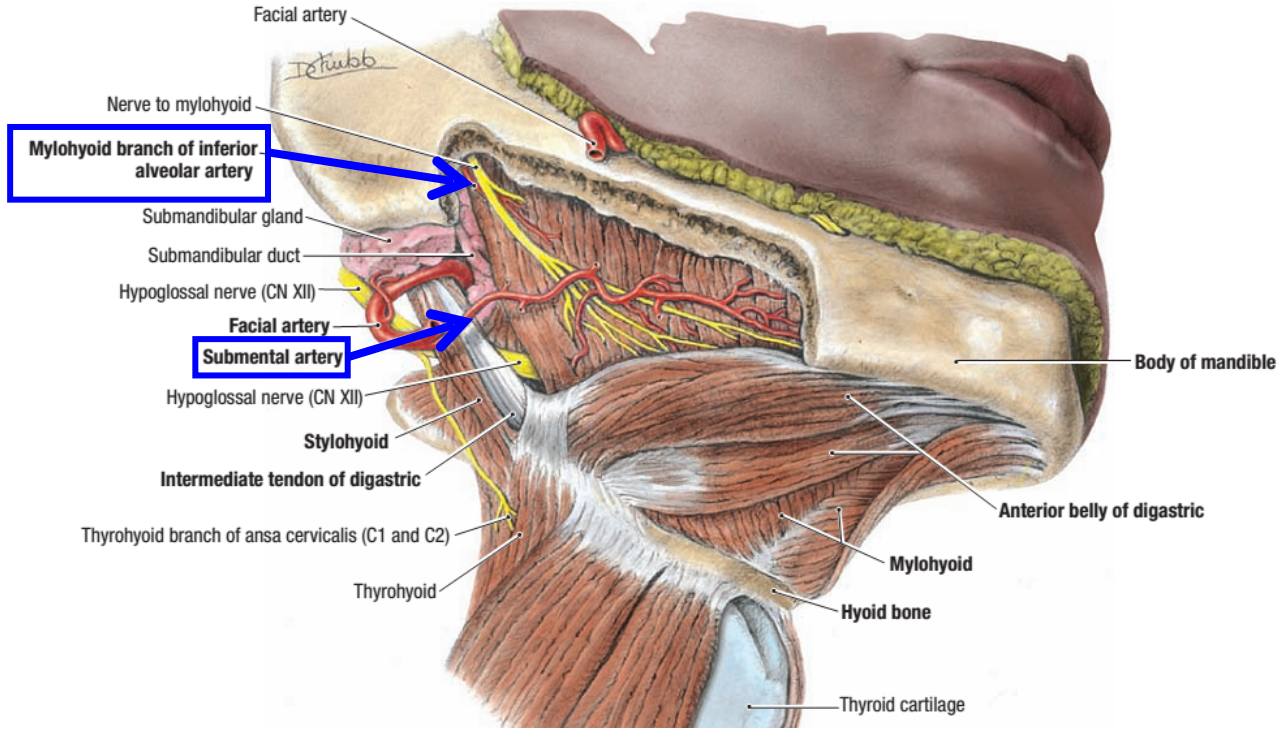
- **Floor:**
  - **Mylohyoid muscle, Hyoglossus muscle**
  - **Superior constrictor muscle of pharynx**


Pterygoid hamulus
Buccinator muscle (*cut*)
Pterygomandibular raphe
Buccinator crest of mandible
Oblique line of mandible
Digastric muscle (anterior belly)
Mylohyoid muscle
Hyoid bone
Superic
Stylogl
Stylohy
Styloph
Middle
Hyoglo
Greate
Superic
Thyroh
Inferior


A
Position of palatopharyngeal sphincter on deep surface of superior constrictor
Superior co
Middle co
Inferior co
Esopha

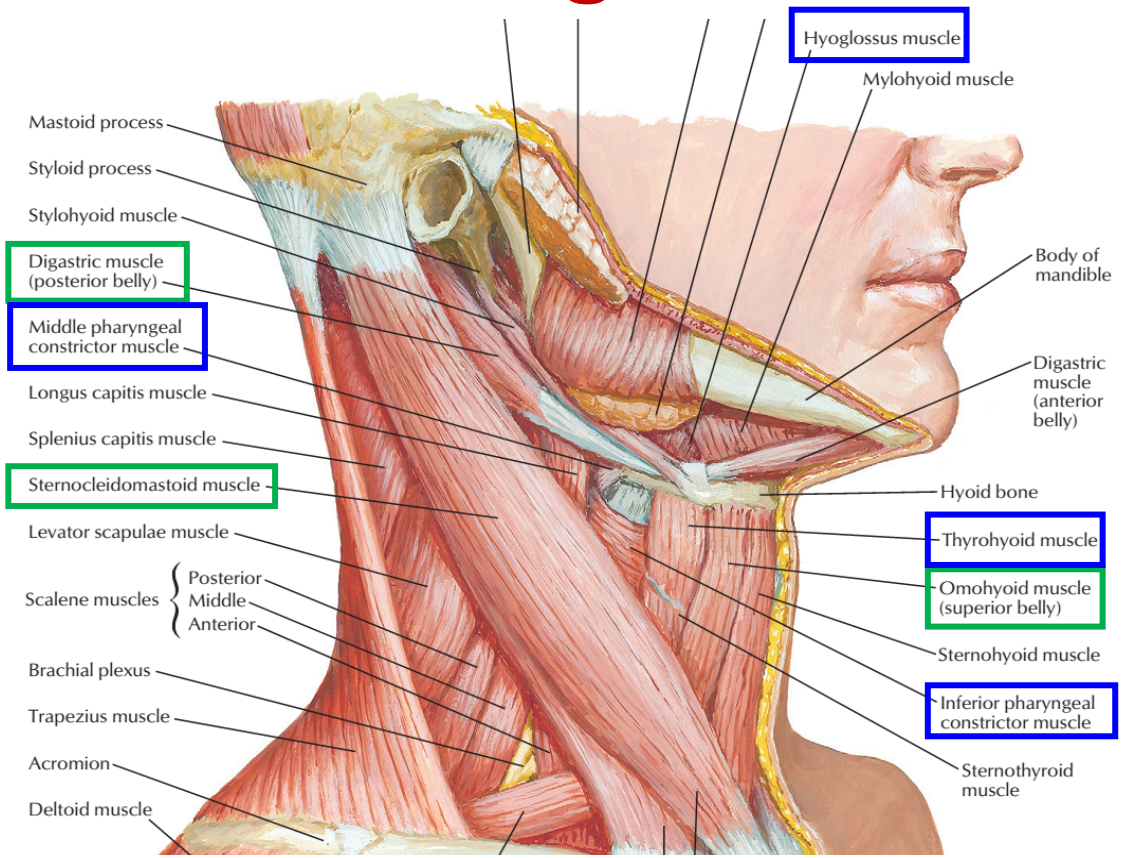
Submandibular triangle





- **Major contents:**
  - **Submandibular salivary gland & lymph nodes**
  - **Hypoglossal nerve (CN.XII)**
  - **Mylohyoid nerve & vessels**
  - **Facial artery & vein**
  - **Submental artery & veins**

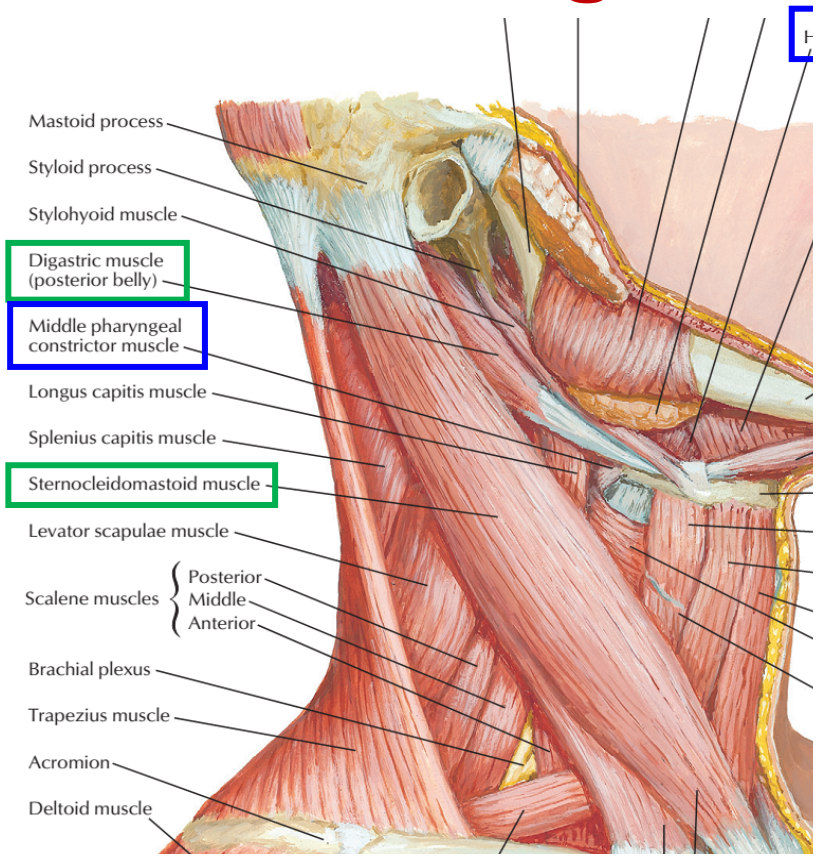
Carotid triangle

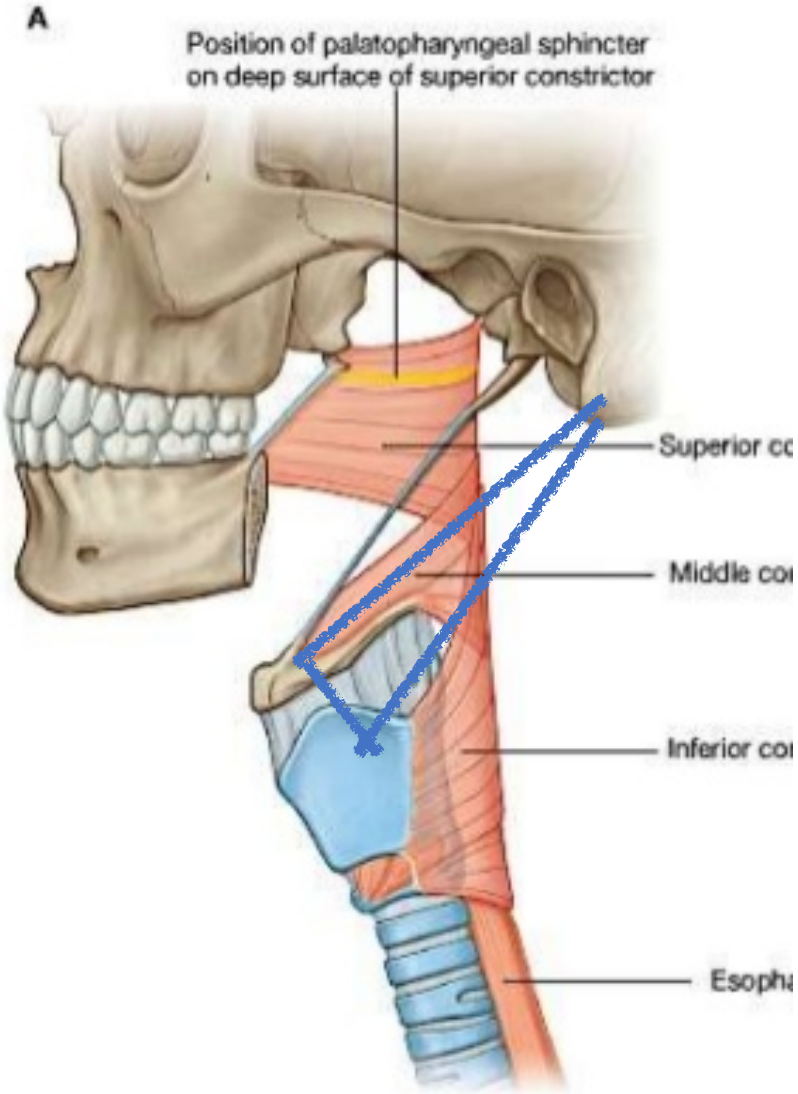


- **Boundaries:**
  - **Posterior belly of digastric, Superior belly of omohyoid, SCM muscle**

- **Floor:**
  - **Inferior & Middle constrictors of pharynx**
  - **Thyrohyoid, Hyoglossus muscle**

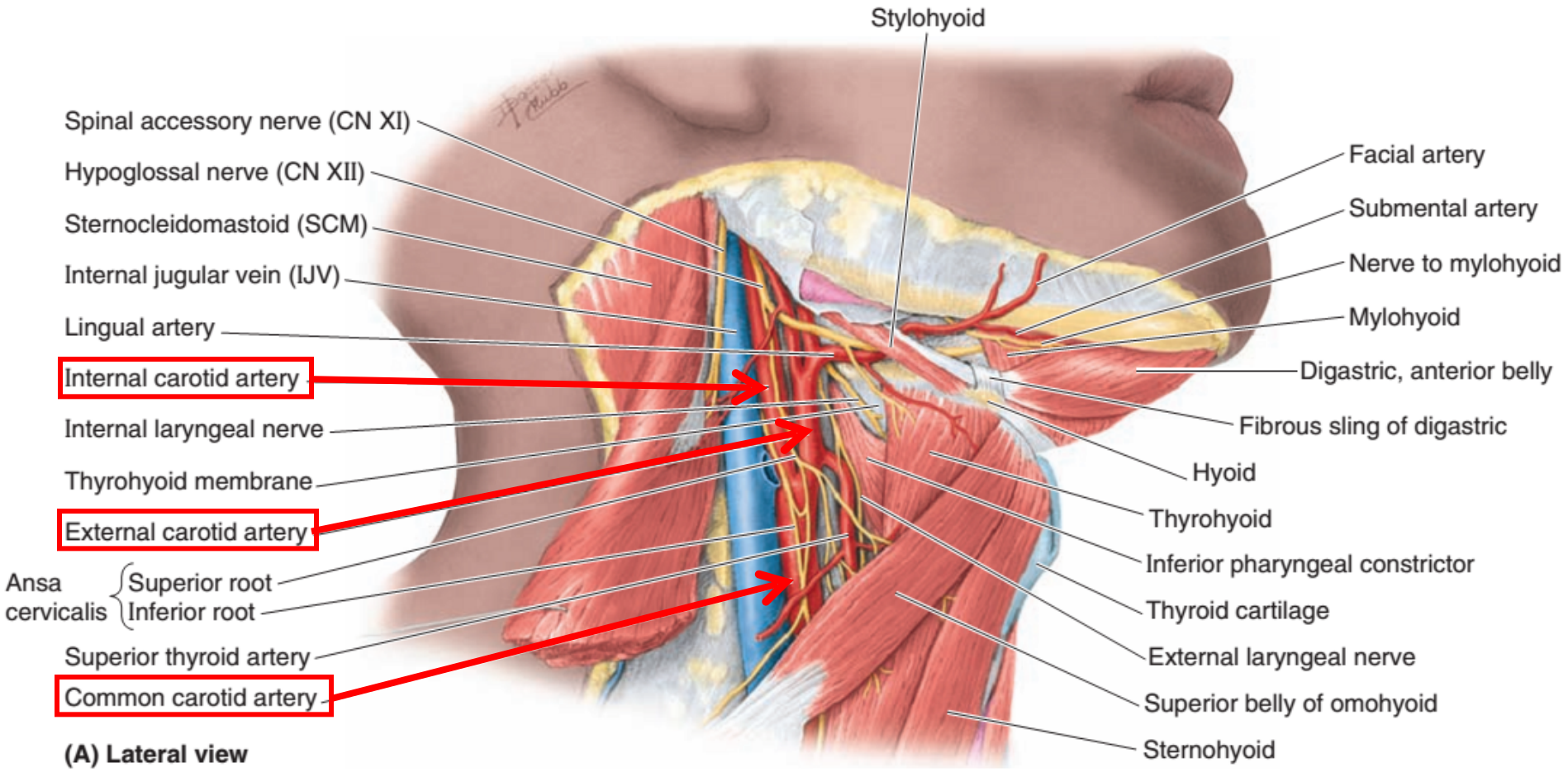
Carotid triangle





- **Boundaries:**
  - **Posterior belly of digastric, Superior belly**
- **Floor:**
  - **Inferior & Middle constrictors of pharynx**
  - **Thyrohyoid, Hyoglossus muscle**

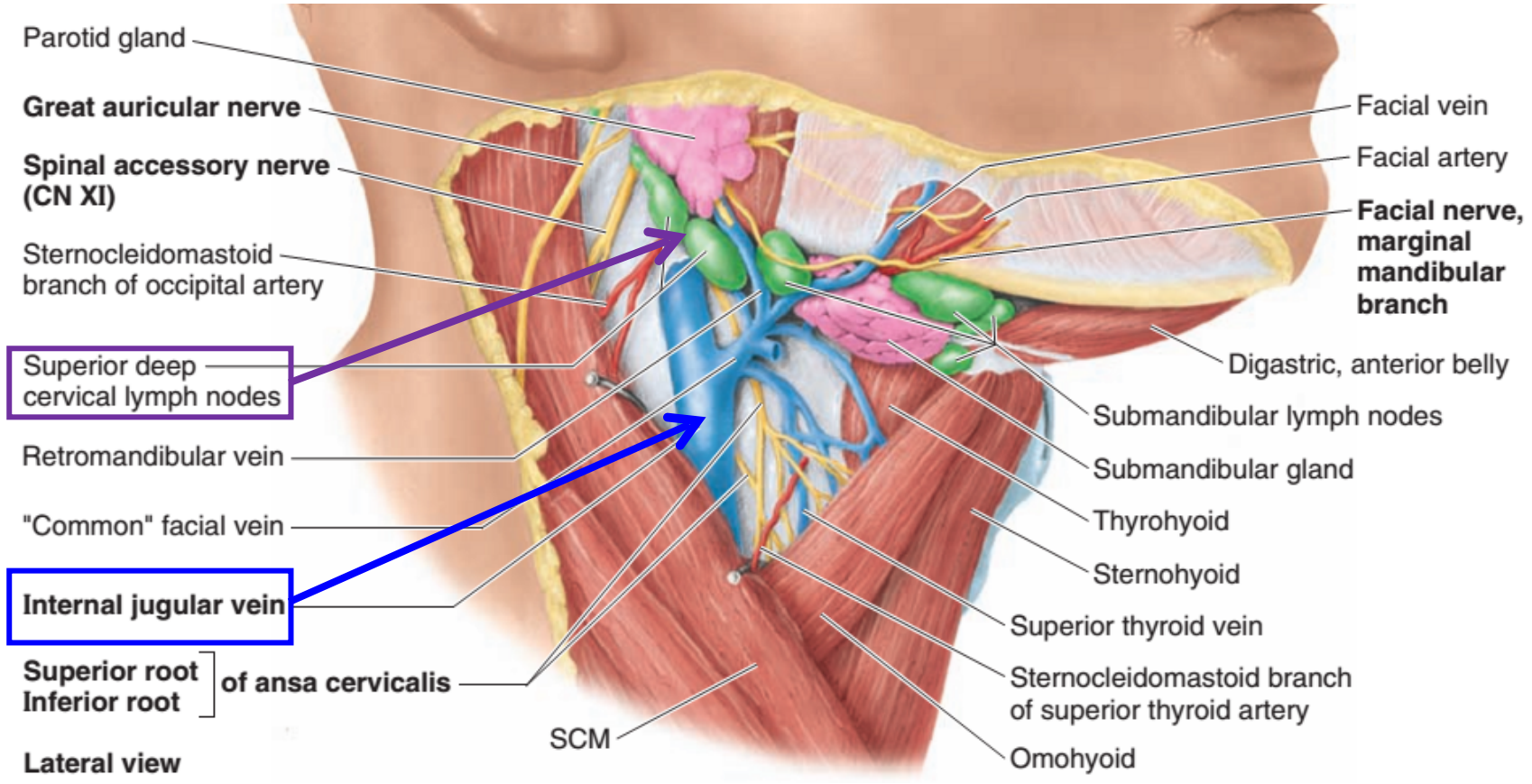
Carotid triangle



(A) Lateral view

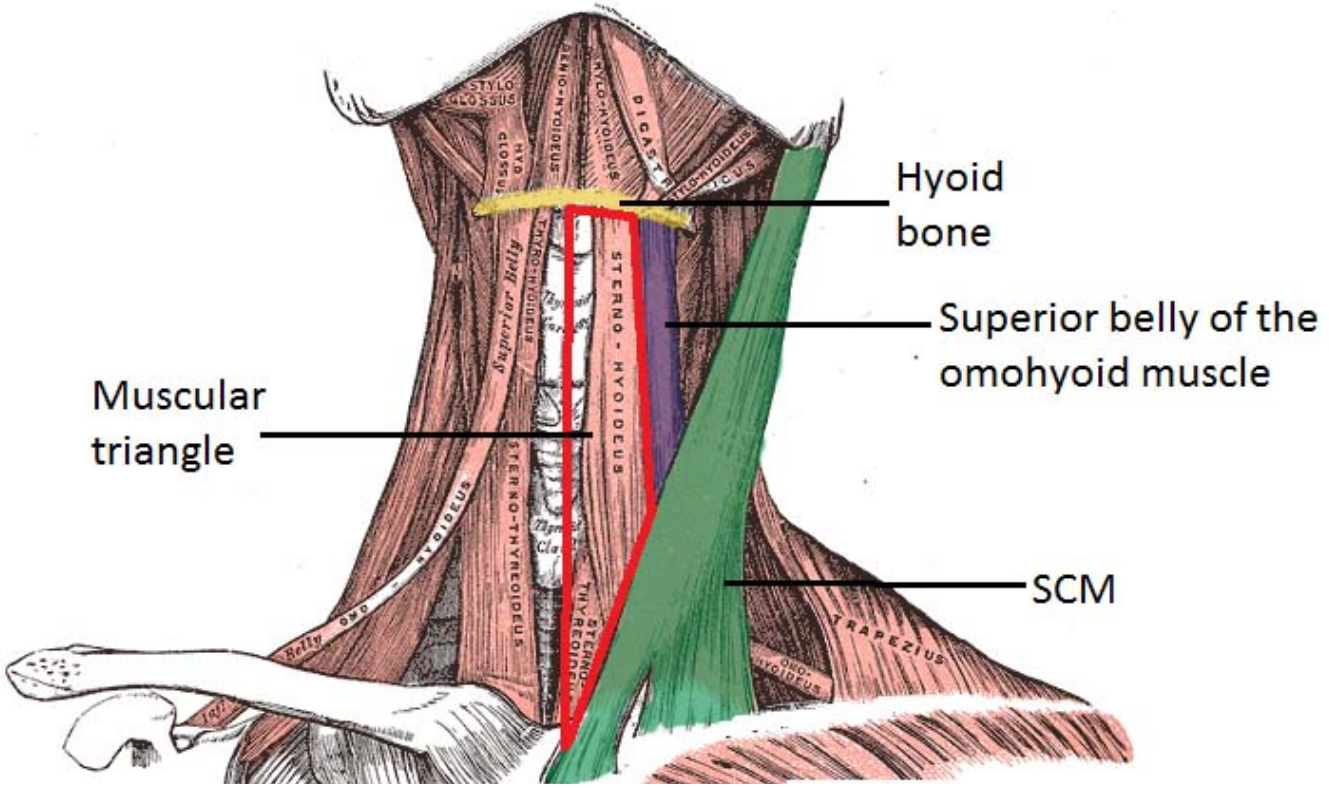
- **Major contents:**
  - **Common carotid & Internal carotid arteries**
  - **External carotid artery**

Carotid triangle



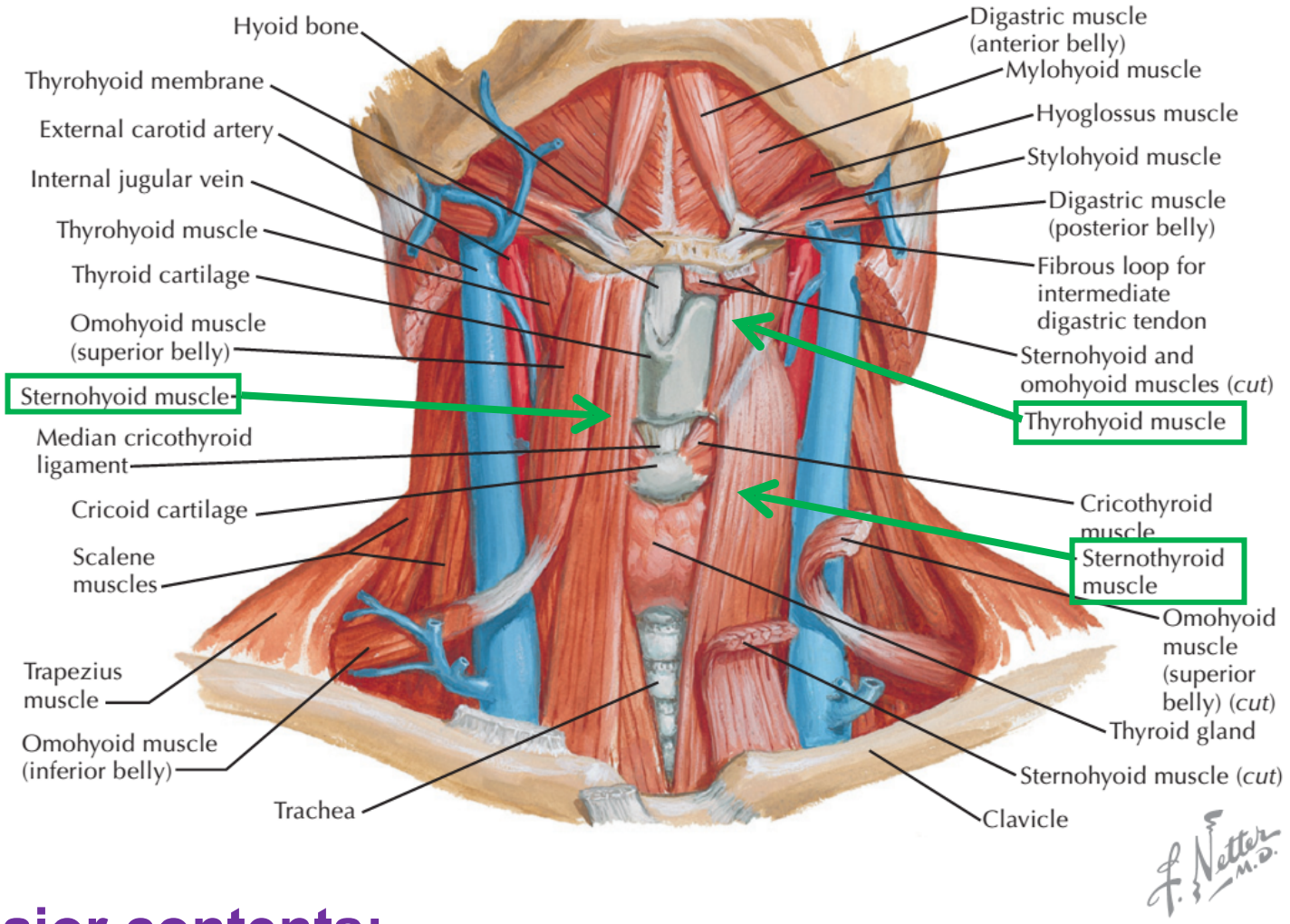
- **Major contents:**
  - **Internal jugular vein**
  - **Superior deep cervical lymph nodes**

Muscular triangle



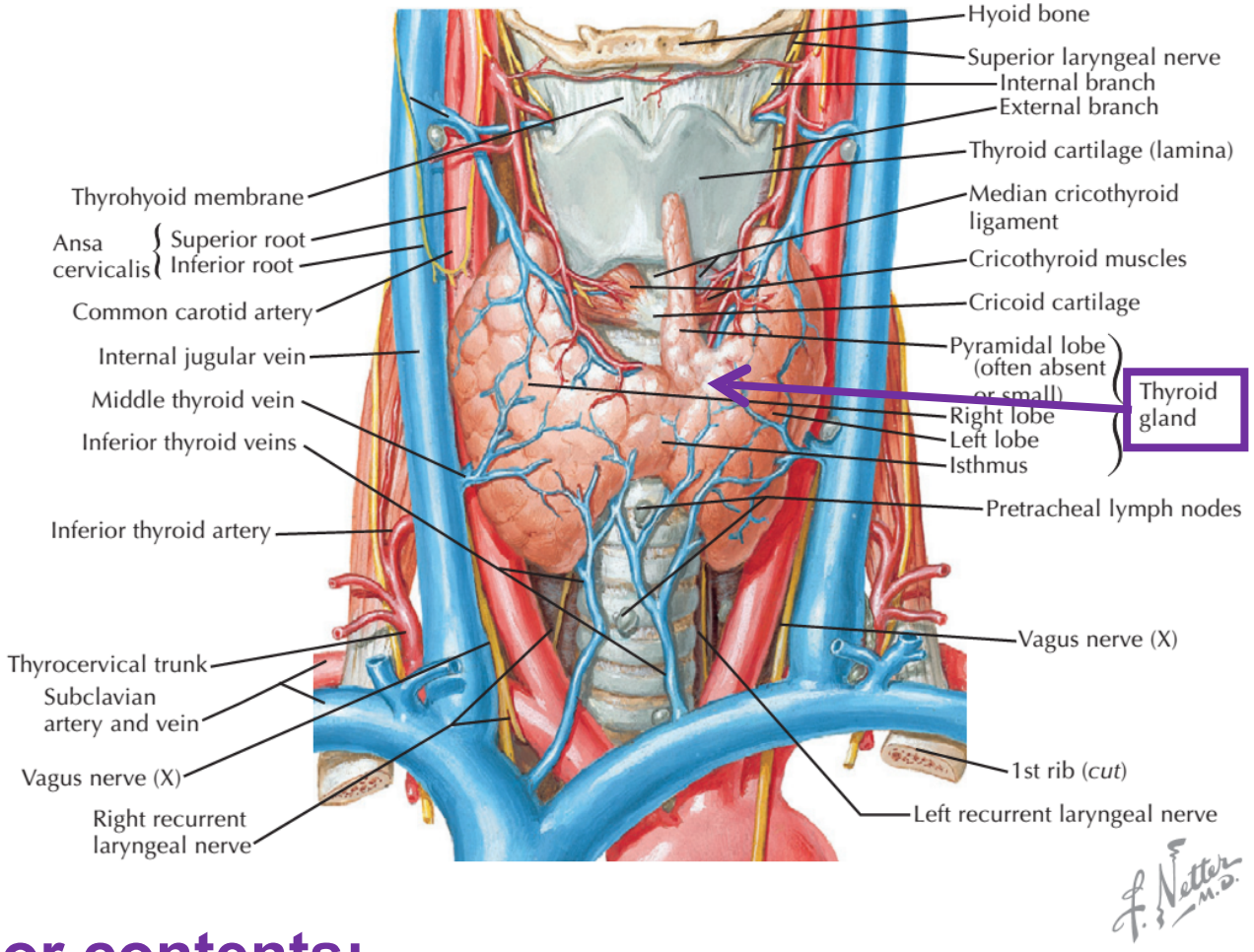
- **Boundaries:**
  - **Anterior midline of neck**
  - **Superior belly of omohyoid muscle**
  - **Anterior border of SCM muscle**

Muscular triangle



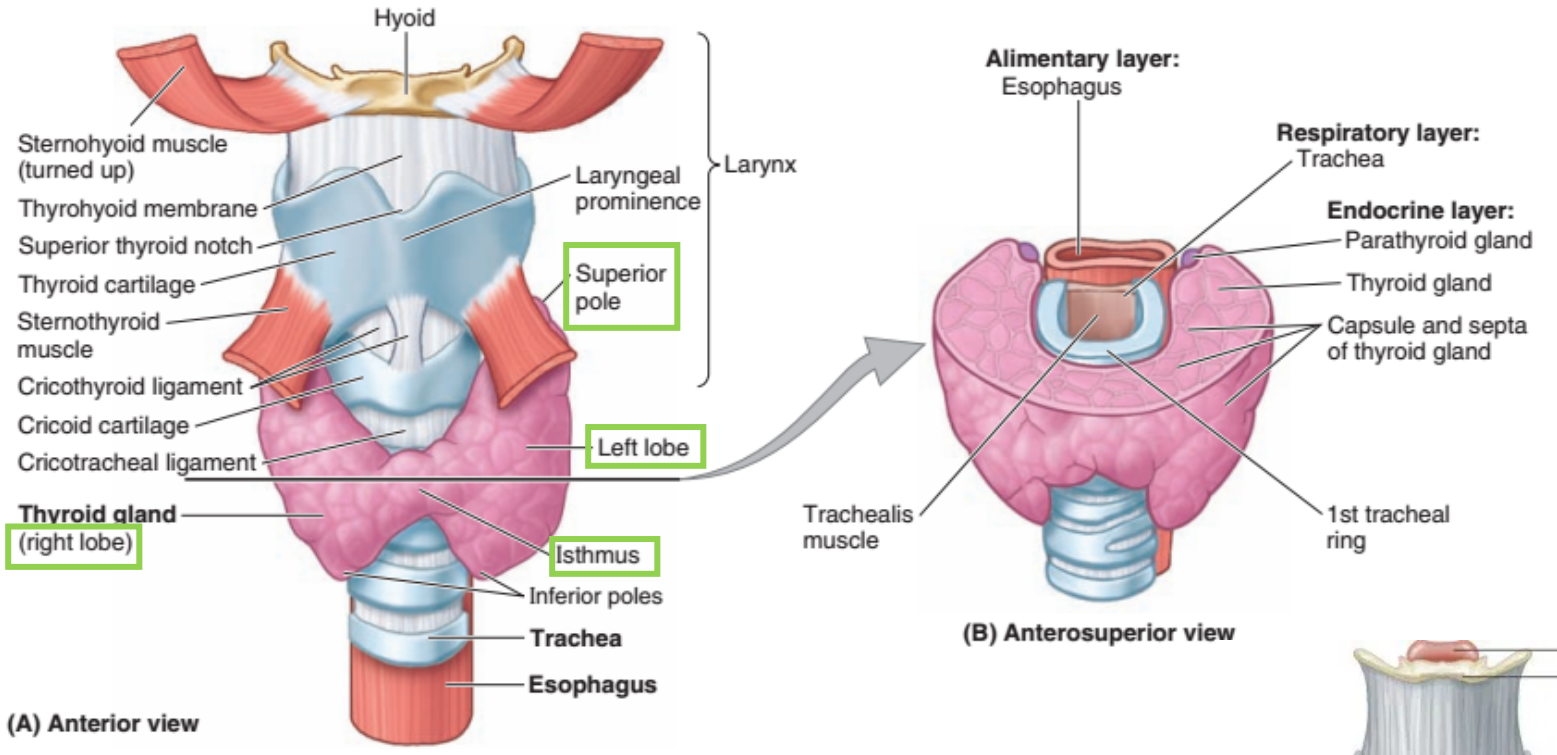
- **Major contents:**
  - **Sternohyoid, Sternothyroid, Thyrohyoid muscles**

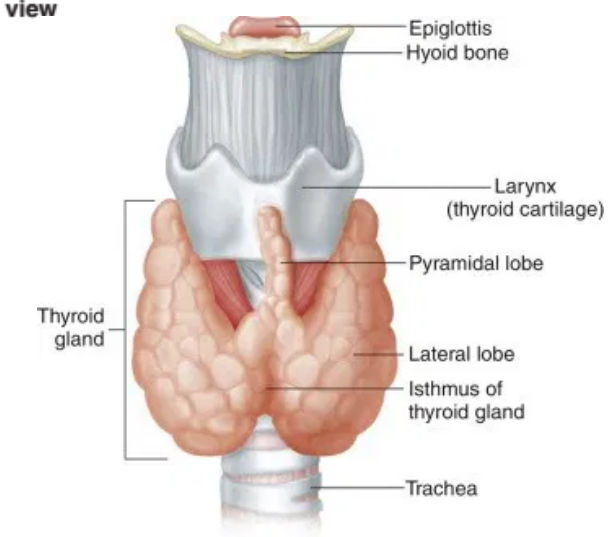
Muscular triangle



- **Major contents:**
  - **Thyroid & parathyroid glands**
  - **Thyroid vessels**

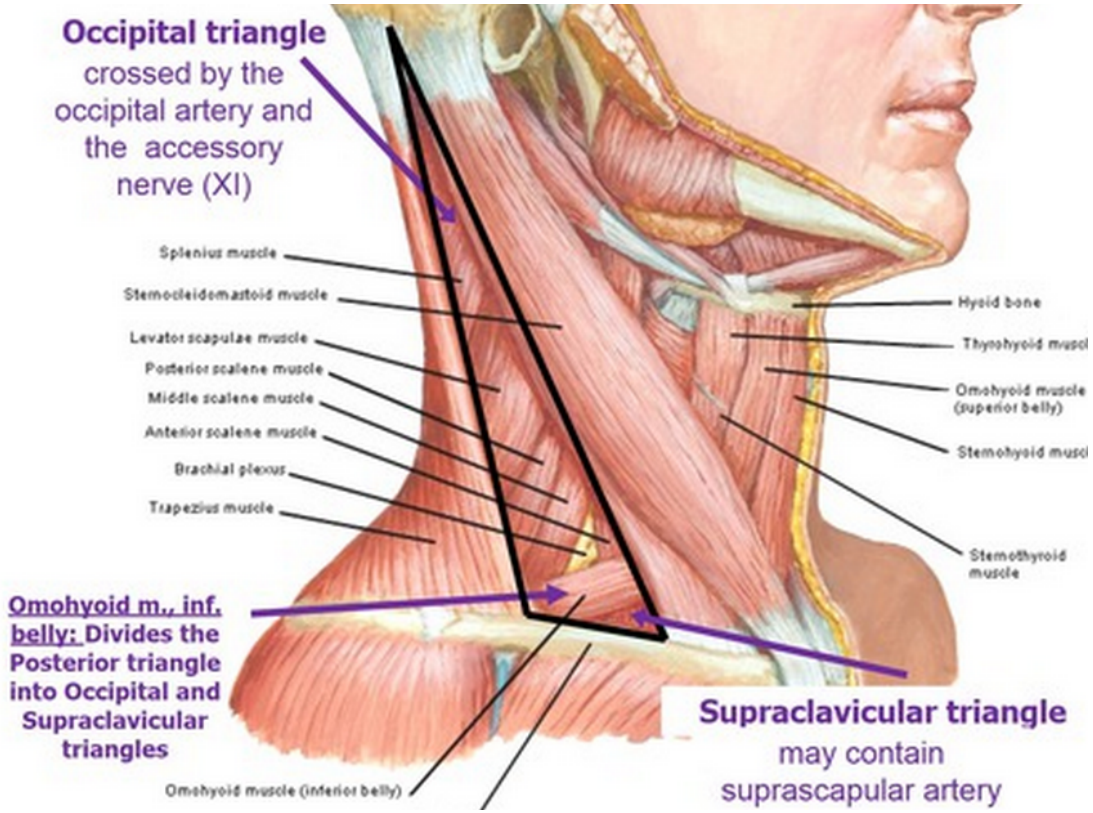
Thyroid gland





- **Anterior to trachea, Deep to infrahyoid muscles**
- **Isthmus b/w lobes → below cricoid cartilage**
- **Suspensory ligament attached to larynx**

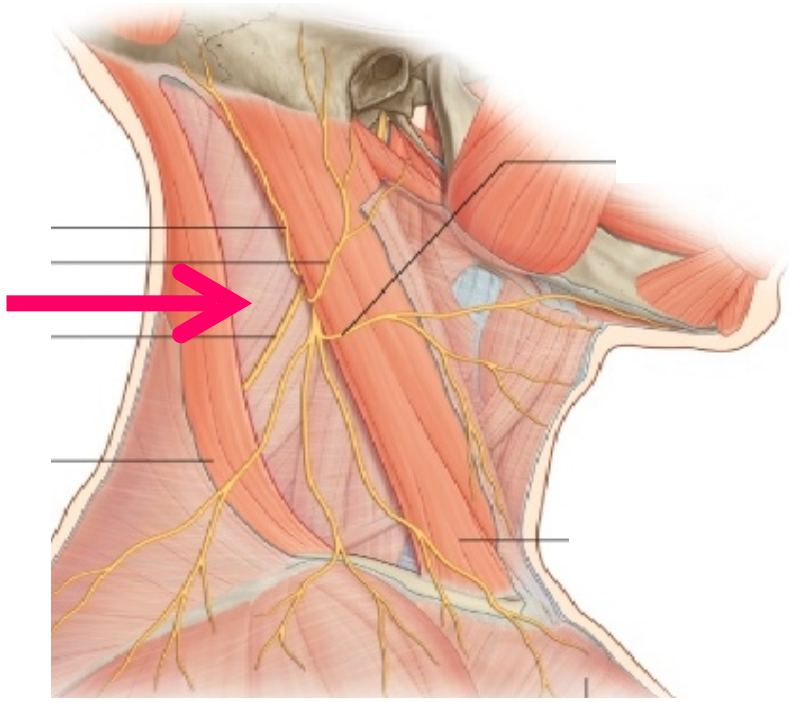
Posterior triangles of neck



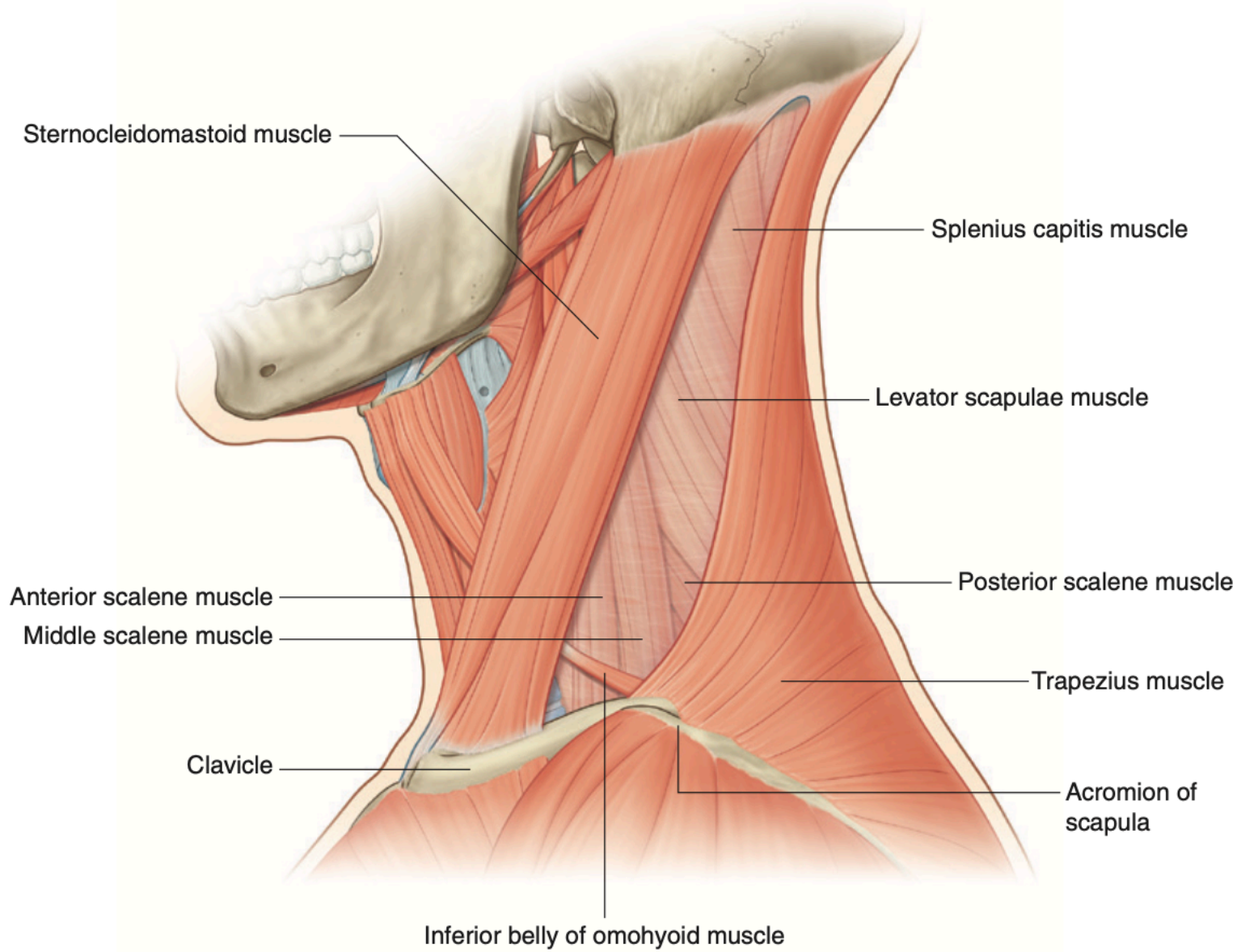
- **Boundaries**
  - **Posterior border of SCM muscle**
  - **Anterior border of trapezius muscle**
  - **Middle 1/3 of clavicle**

Posterior triangles of neck

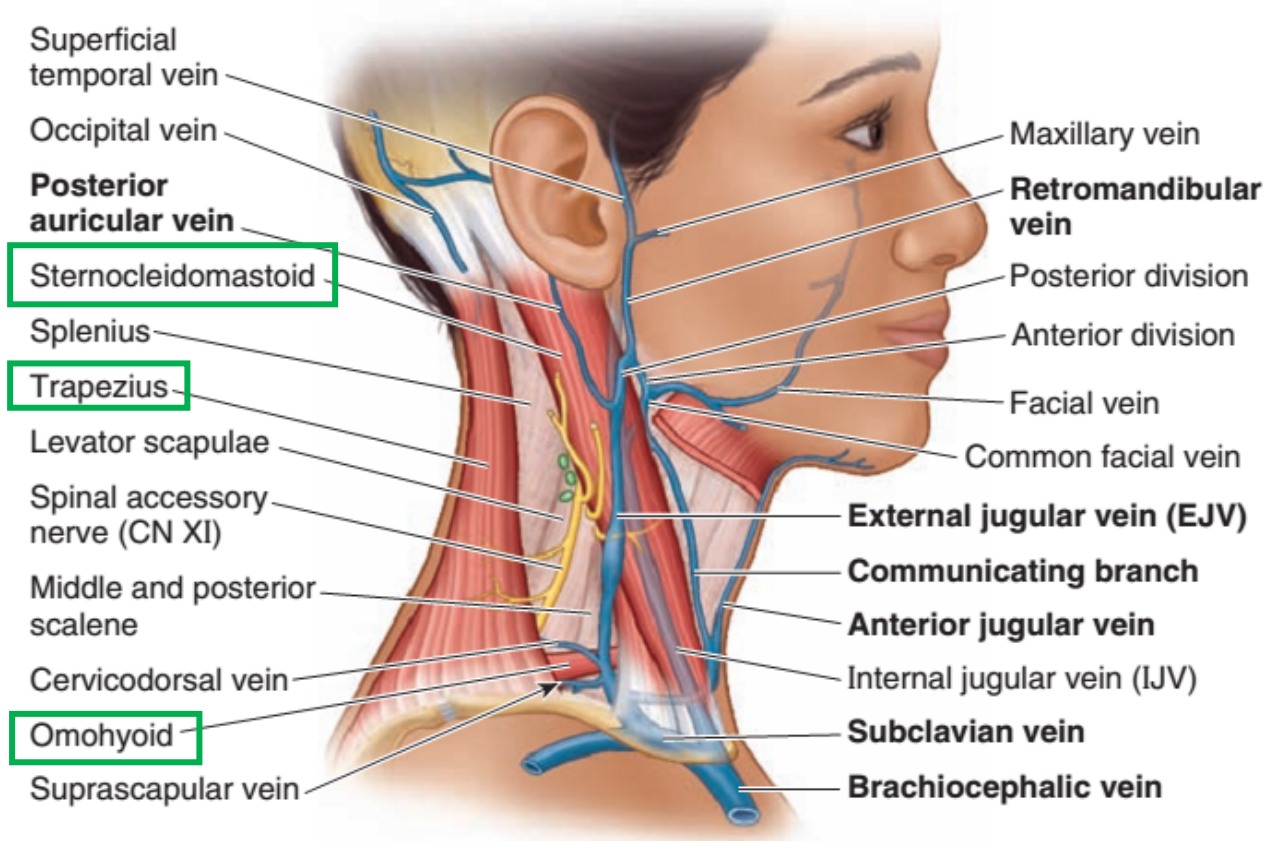




- **Roof**
  - **Investing fascia**
- **Floor**
  - **Prevertebral fascia (covering deep cervical muscles eg. Scalene muscles)**

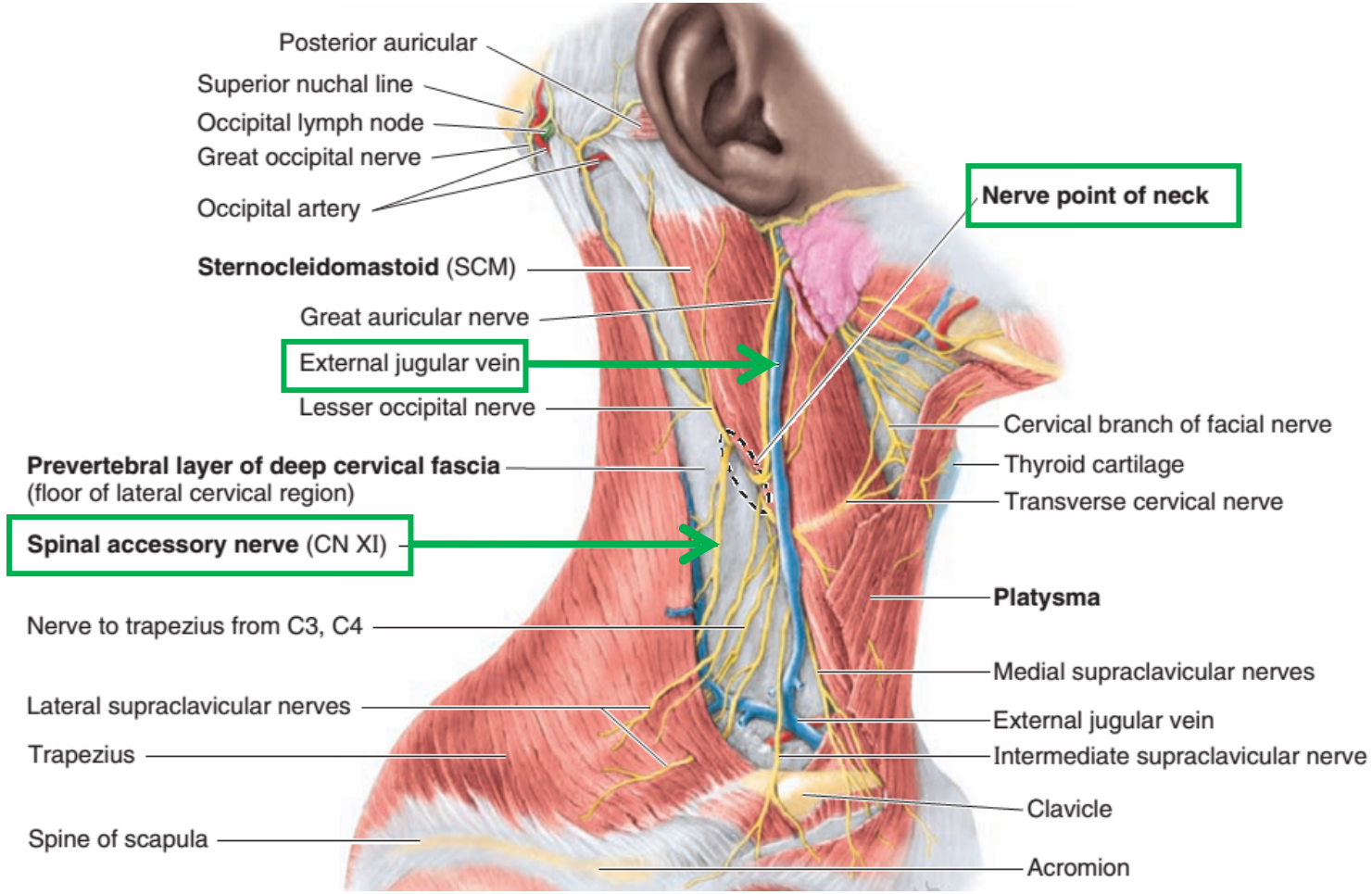

Sternocleidomastoid muscle
Splenius capitis muscle
Levator scapulae muscle
Posterior scalene muscle
Anterior scalene muscle
Middle scalene muscle
Trapezius muscle
Clavicle
Acromion of scapula
Inferior belly of omohyoid muscle

Occipital triangle



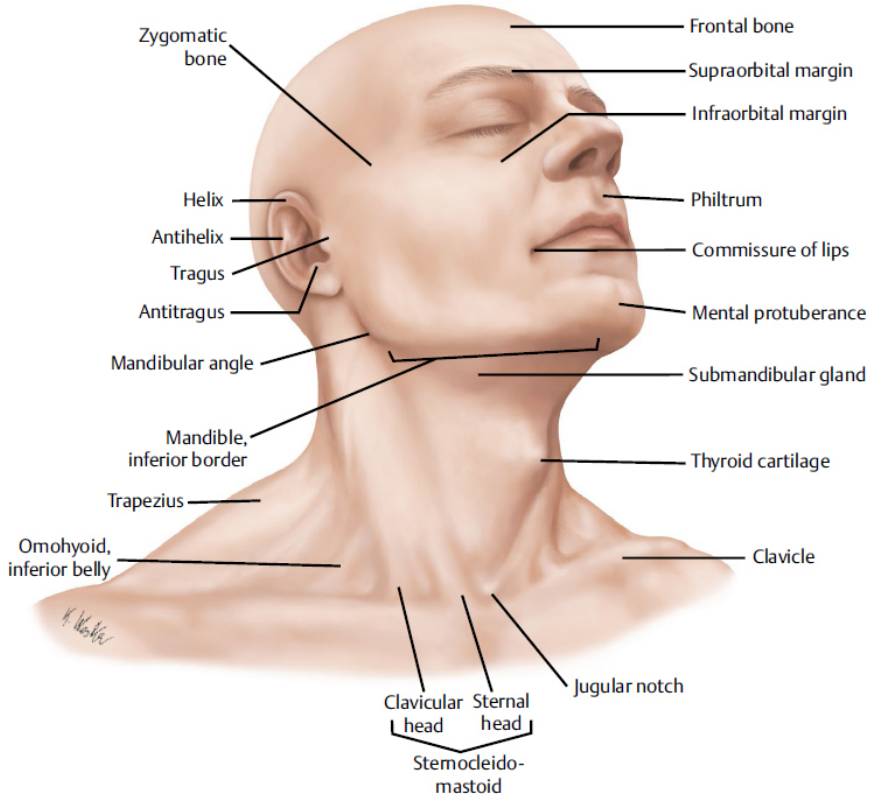
- **Boundaries:**
  - **Posterior border of SCM**
  - **Anterior border of trapezius muscles**
  - **Inferior belly of omohyoid muscle**

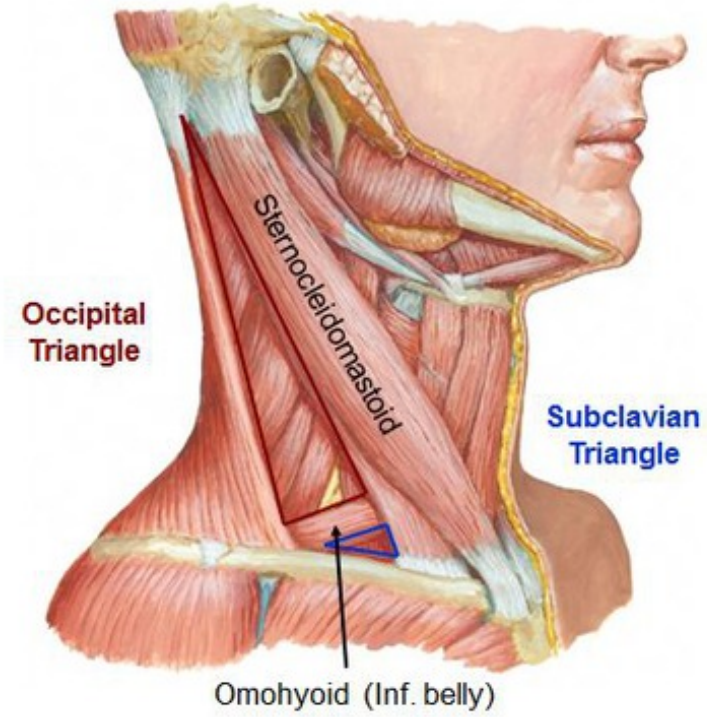
Occipital triangle



- **Major contents:**
  - **Spinal accessory n. (CN.XI) & Cervical plexus**
  - **External jugular vein**

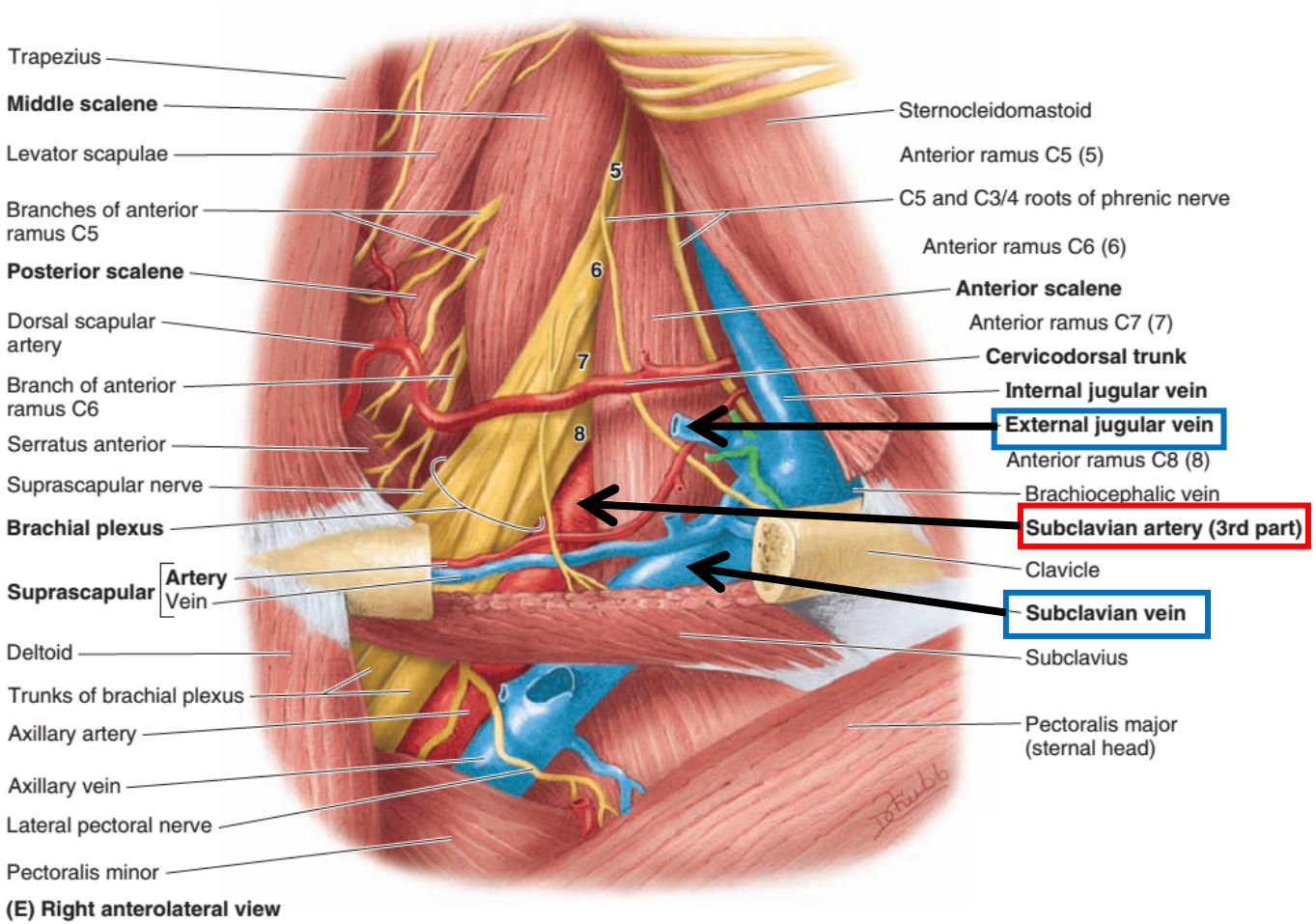
Subclavian triangle





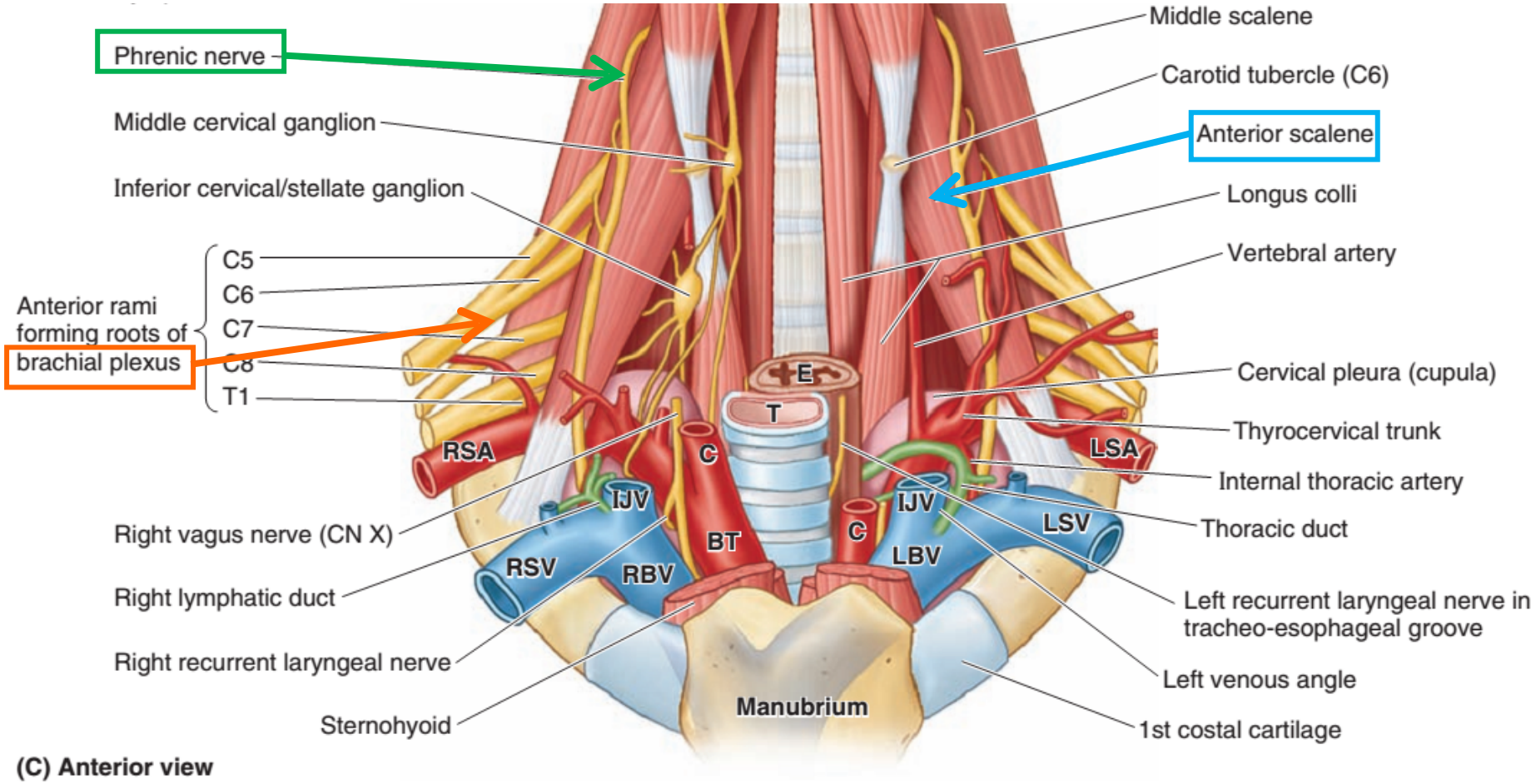
- **Boundaries:**
  - **Posterior border of SCM**
  - **Anterior border of trapezius muscles**
  - **Inferior belly of omohyoid muscle**
  - **Middle 1/3 of clavicle**

Subclavian triangle



- **Major contents:**
  - **Subclavian artery & vein**
  - **External jugular vein**

Subclavian triangle



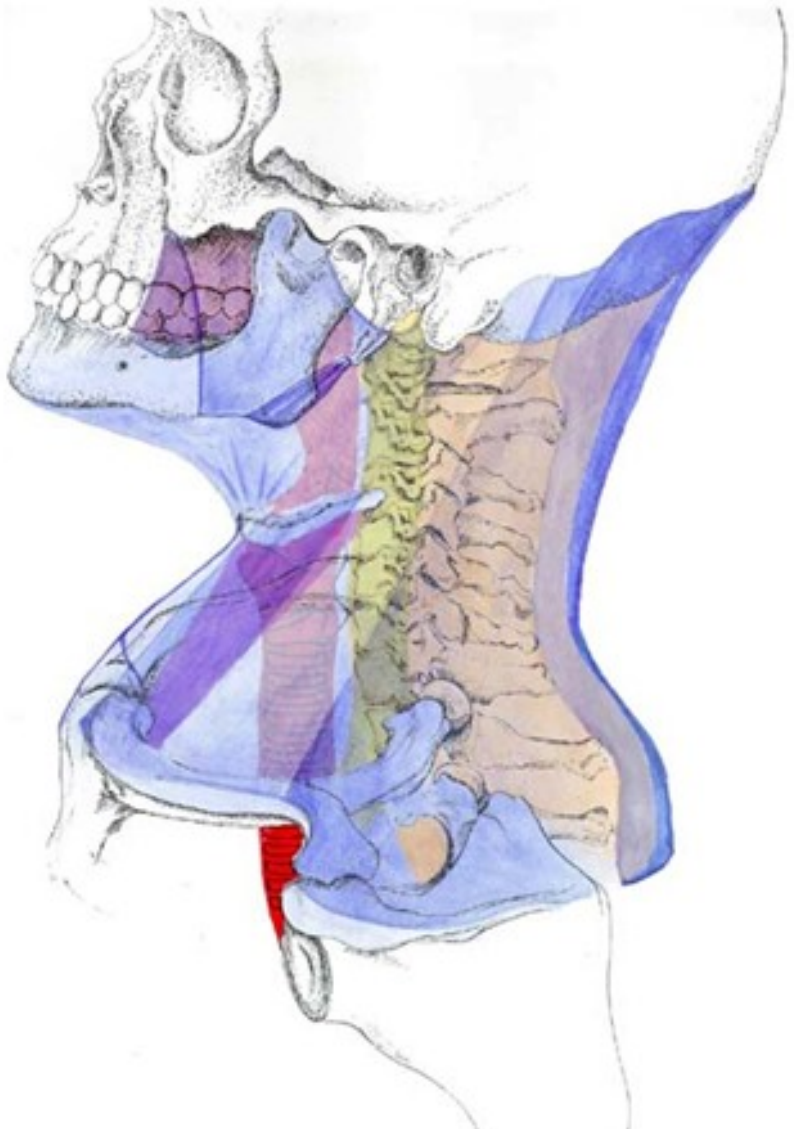
(C) Anterior view

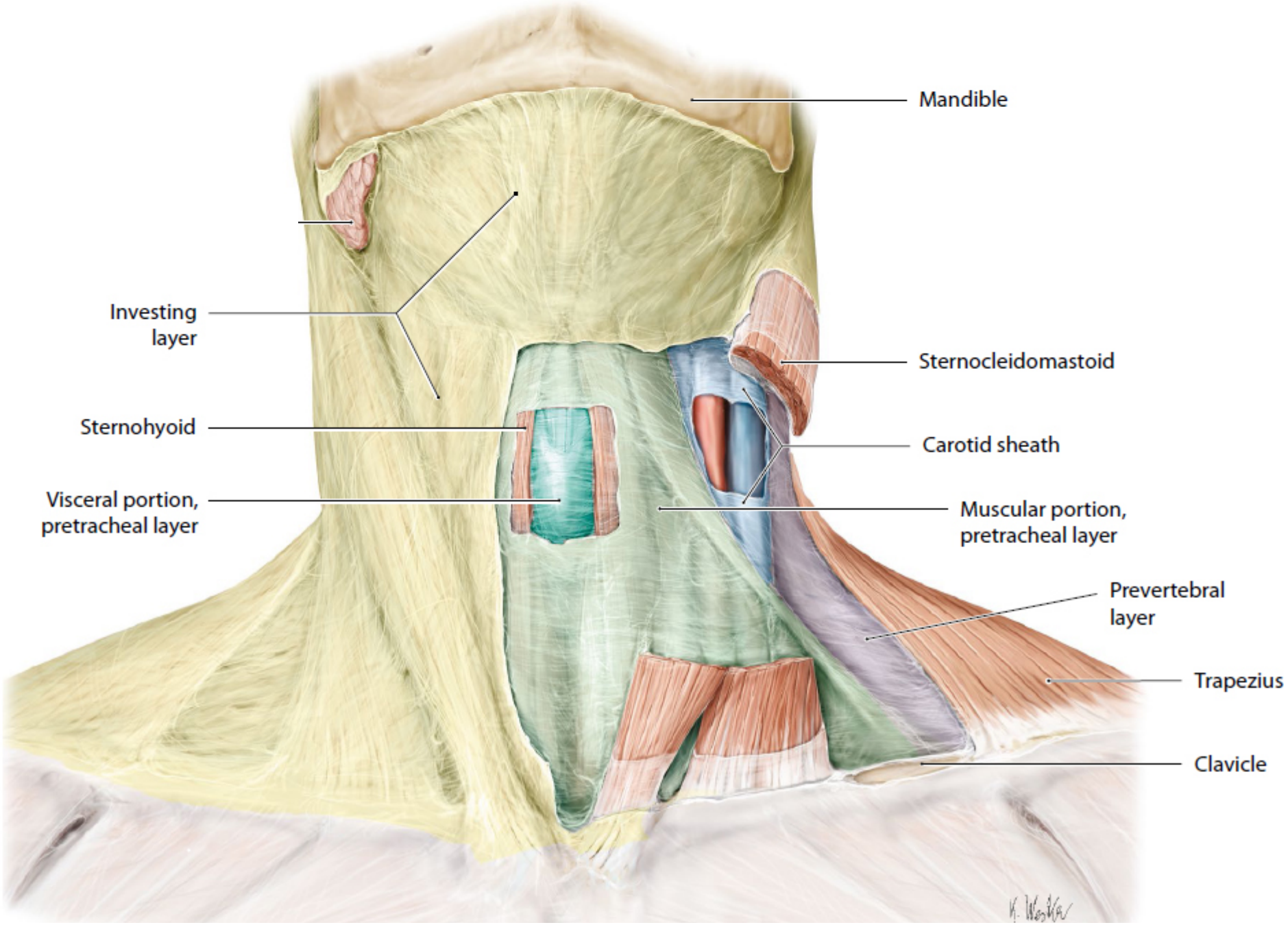
- **Major contents:**
  - **Phrenic nerve (anterior to scalenus anterior muscle)**
  - **Brachial plexus (posterior to scalenus anterior muscle)**

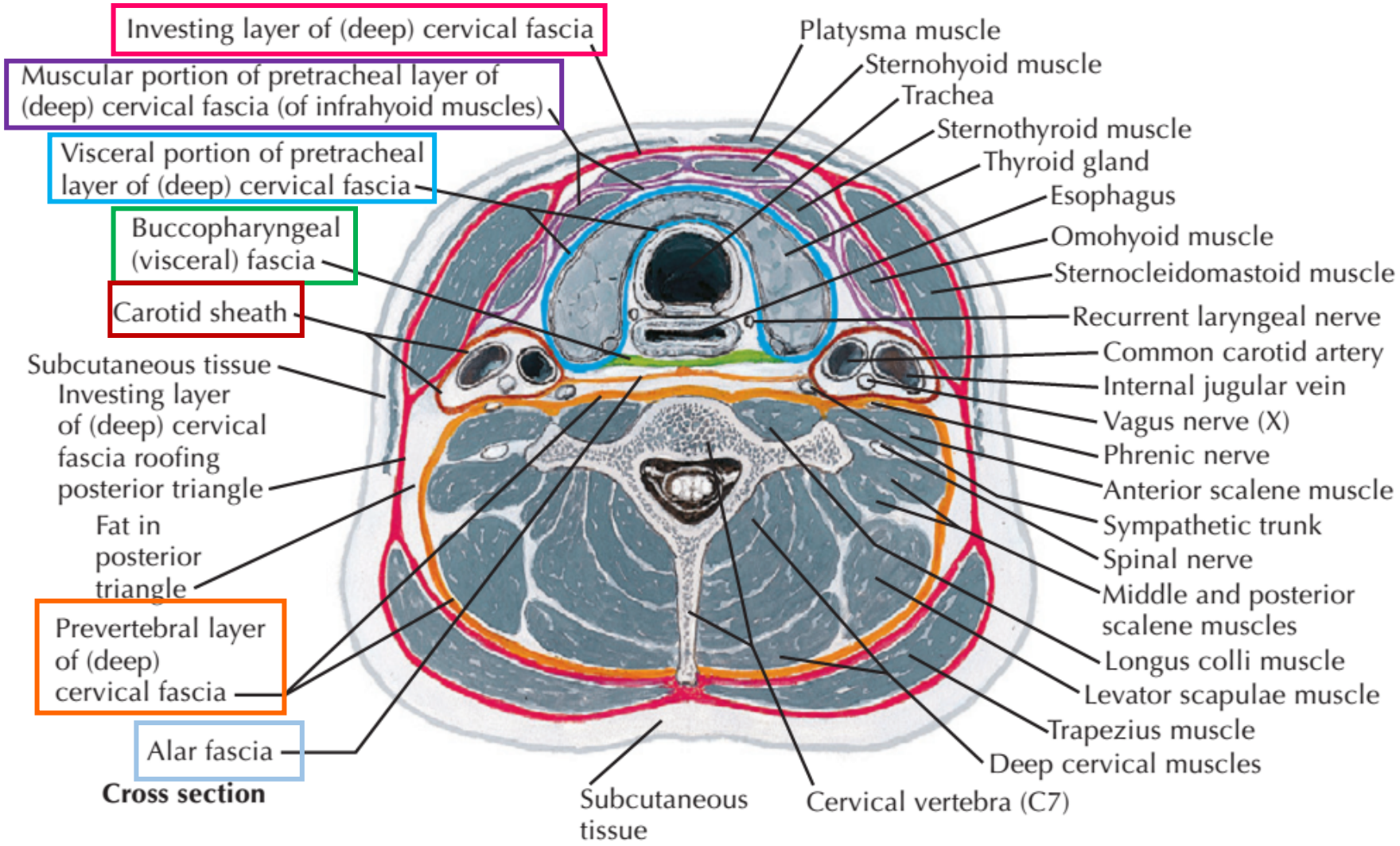
Deep fascia of neck (Deep cervical fascia)

- **Deep to platysma m.**

1. **Investing fascia**
2. **Pretracheal fascia**
3. **Buccopharyngeal fascia**
4. **Prevertebral fascia**
5. **Alar fascia**
6. **Carotid sheath**




Mandible
Investing layer
Sternocleidomastoid
Sternohyoid
Carotid sheath
Visceral portion, pretracheal layer
Muscular portion, pretracheal layer
Prevertebral layer
Trapezius
Clavicle


Investing layer of (deep) cervical fascia
Muscular portion of pretracheal layer of (deep) cervical fascia (of infrahyoid muscles)
Visceral portion of pretracheal layer of (deep) cervical fascia
Buccopharyngeal (visceral) fascia
Carotid sheath
Subcutaneous tissue
Investing layer of (deep) cervical fascia roofing posterior triangle
Fat in posterior triangle
Prevertebral layer of (deep) cervical fascia
Alar fascia
Cross section
Platysma muscle
Sternohyoid muscle
Trachea
Sternothyroid muscle
Thyroid gland
Esophagus
Omohyoid muscle
Sternocleidomastoid muscle
Recurrent laryngeal nerve
Common carotid artery
Internal jugular vein
Vagus nerve (X)
Phrenic nerve
Anterior scalene muscle
Sympathetic trunk
Spinal nerve
Middle and posterior scalene muscles
Longus colli muscle
Levator scapulae muscle
Trapezius muscle
Deep cervical muscles
Subcutaneous tissue
Cervical vertebra (C7)

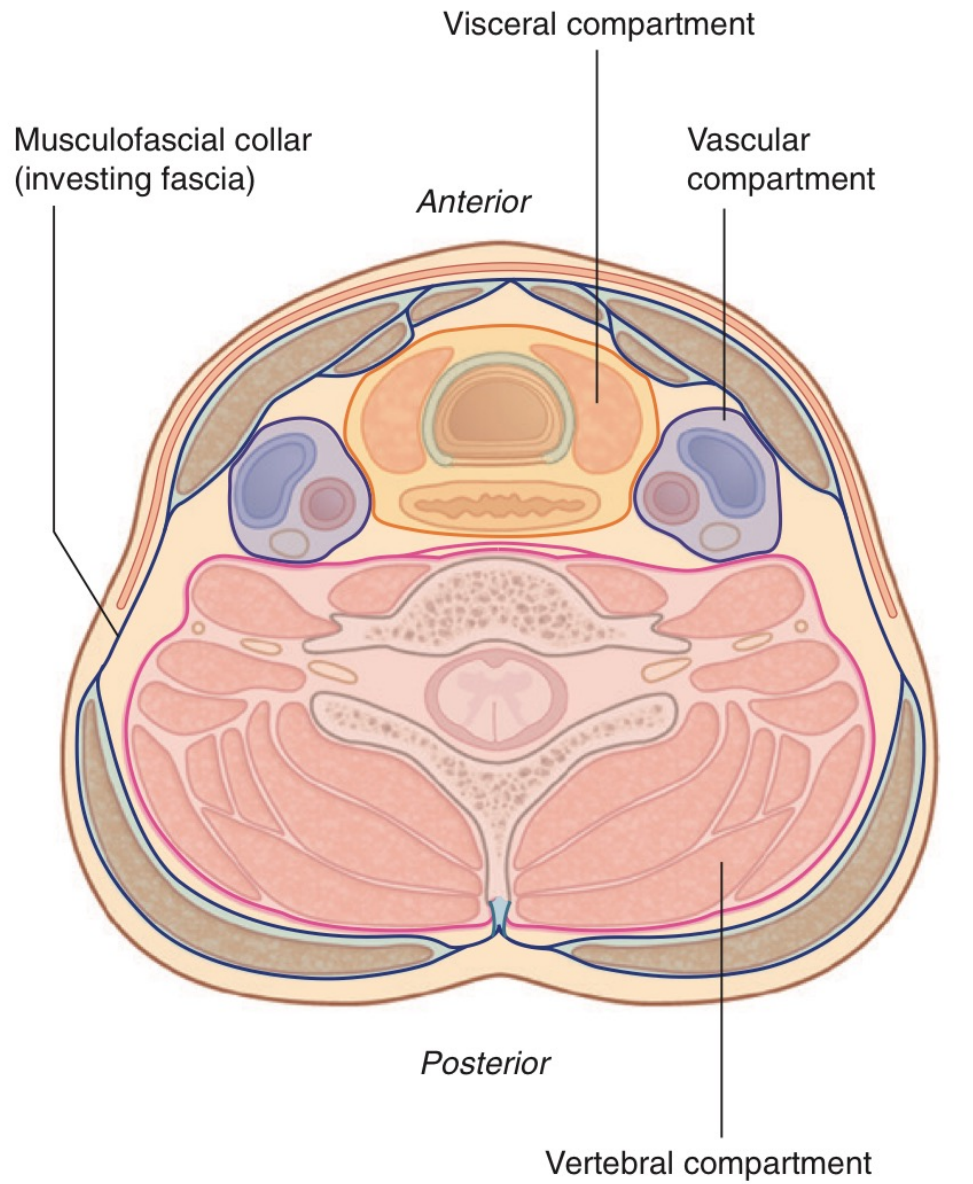
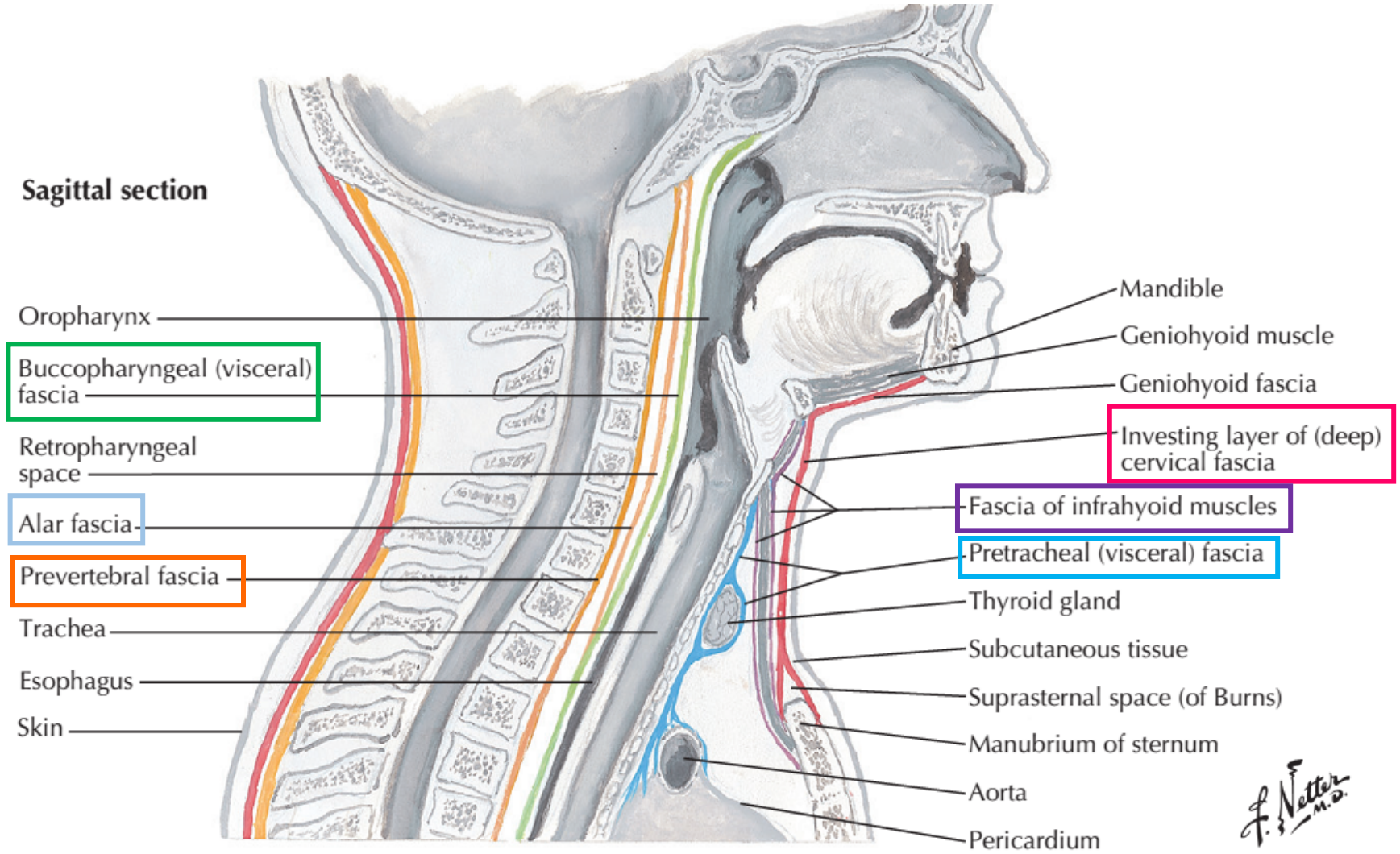
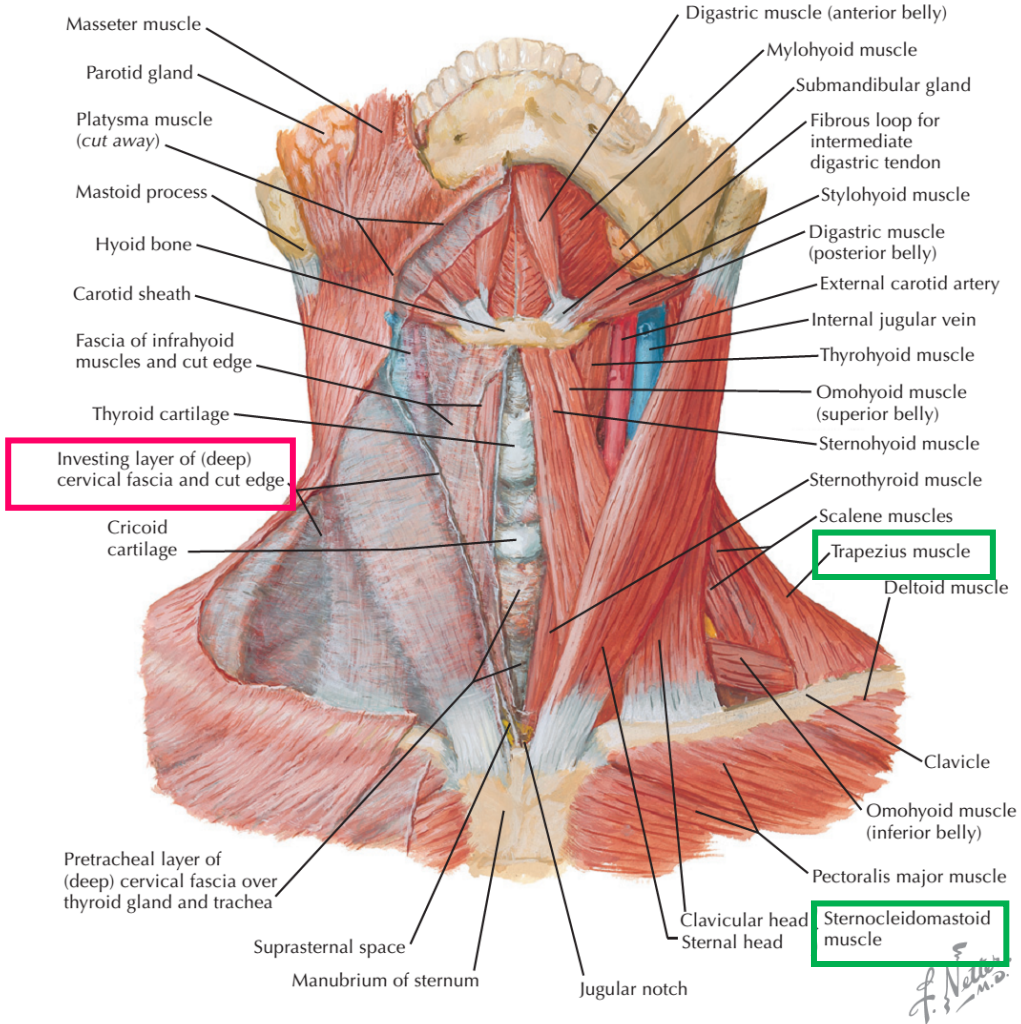


Fig. 8.5 Major compartments of the neck.

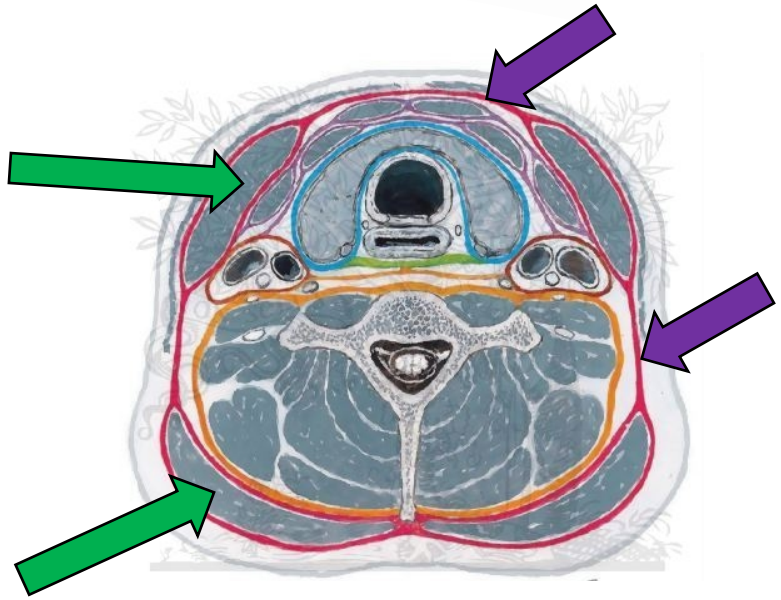

Sagittal section
Oropharynx
Buccopharyngeal (visceral) fascia
Retropharyngeal space
Alar fascia
Prevertebral fascia
Trachea
Esophagus
Skin
Mandible
Geniohyoid muscle
Geniohyoid fascia
Investing layer of (deep) cervical fascia
Fascia of infrahyoid muscles
Pretracheal (visceral) fascia
Thyroid gland
Subcutaneous tissue
Suprasternal space (of Burns)
Manubrium of sternum
Aorta
Pericardium
F. Netter M.D.

Investing fascia

- **Surround Trapezius & SCM muscles**
- **Form Roof of anterior & posterior triangles**

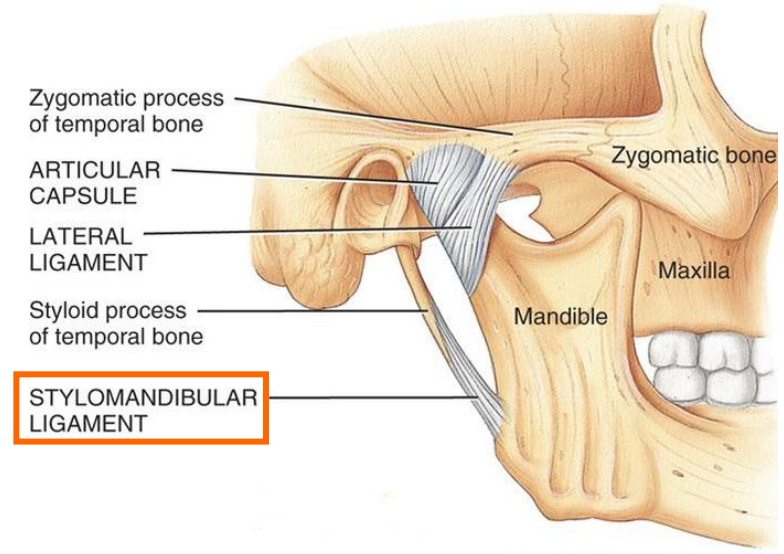


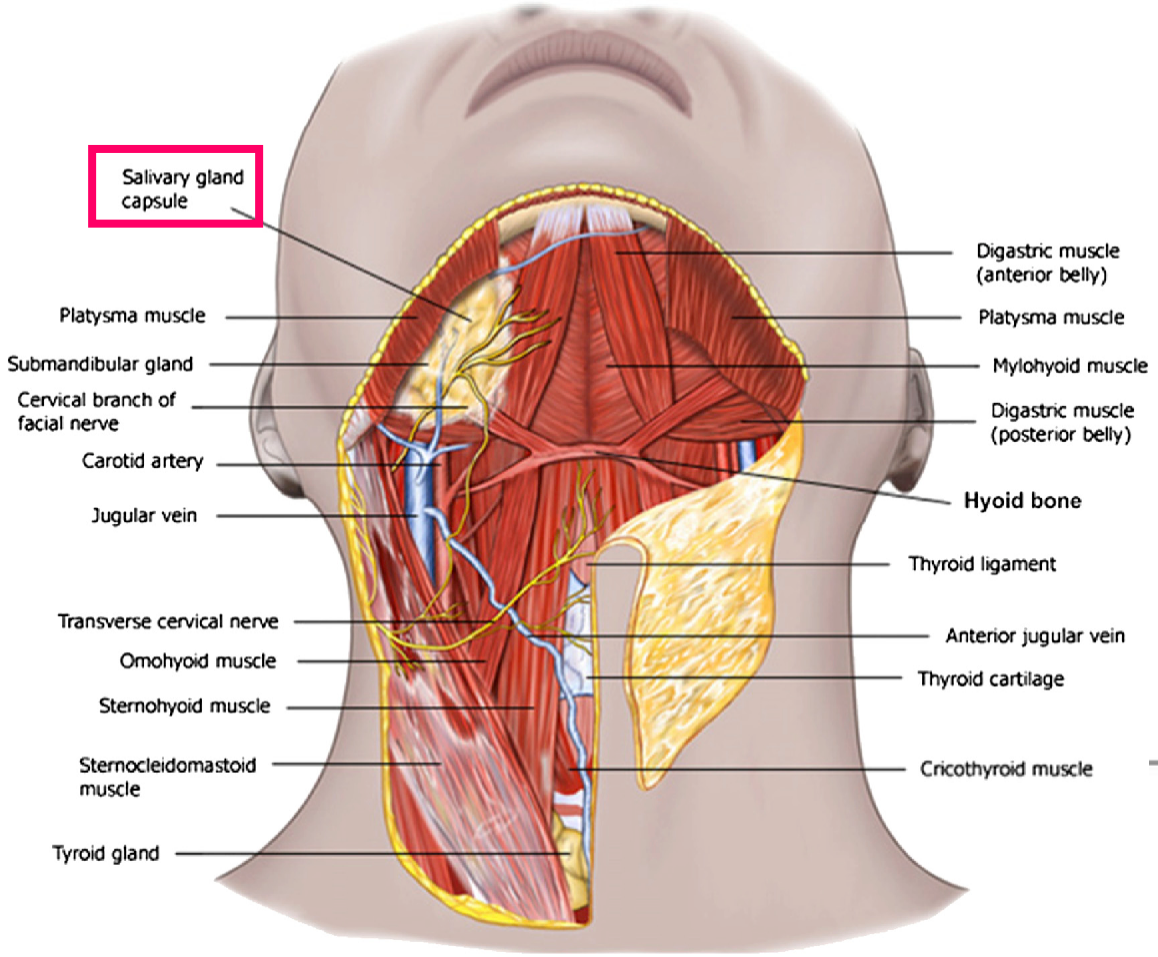


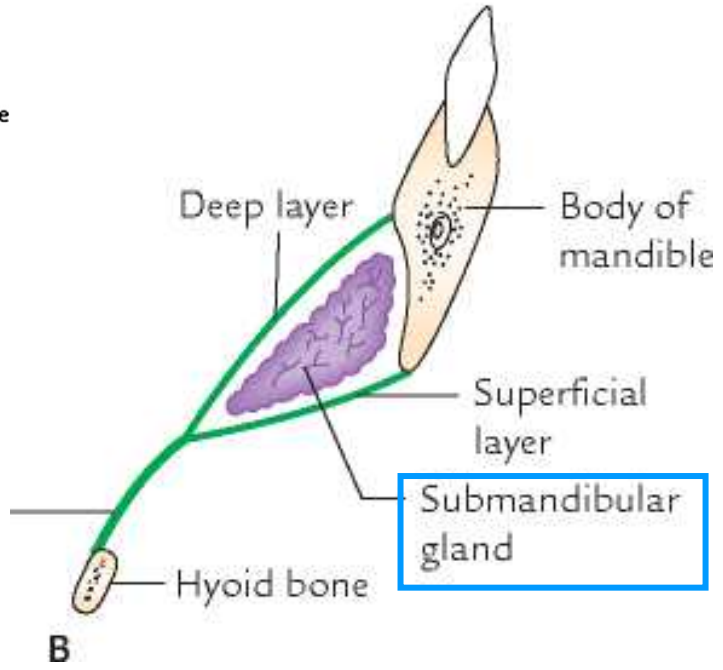


Investing fascia

- Form stylomandibular ligament
- Form sheath of submandibular gland





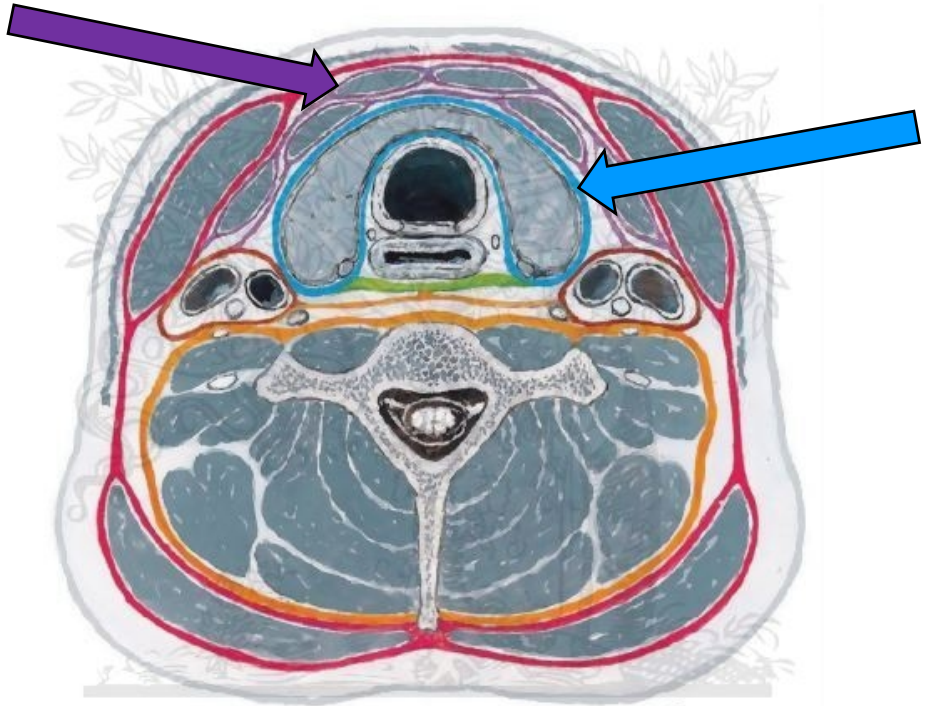


Pretracheal fascia

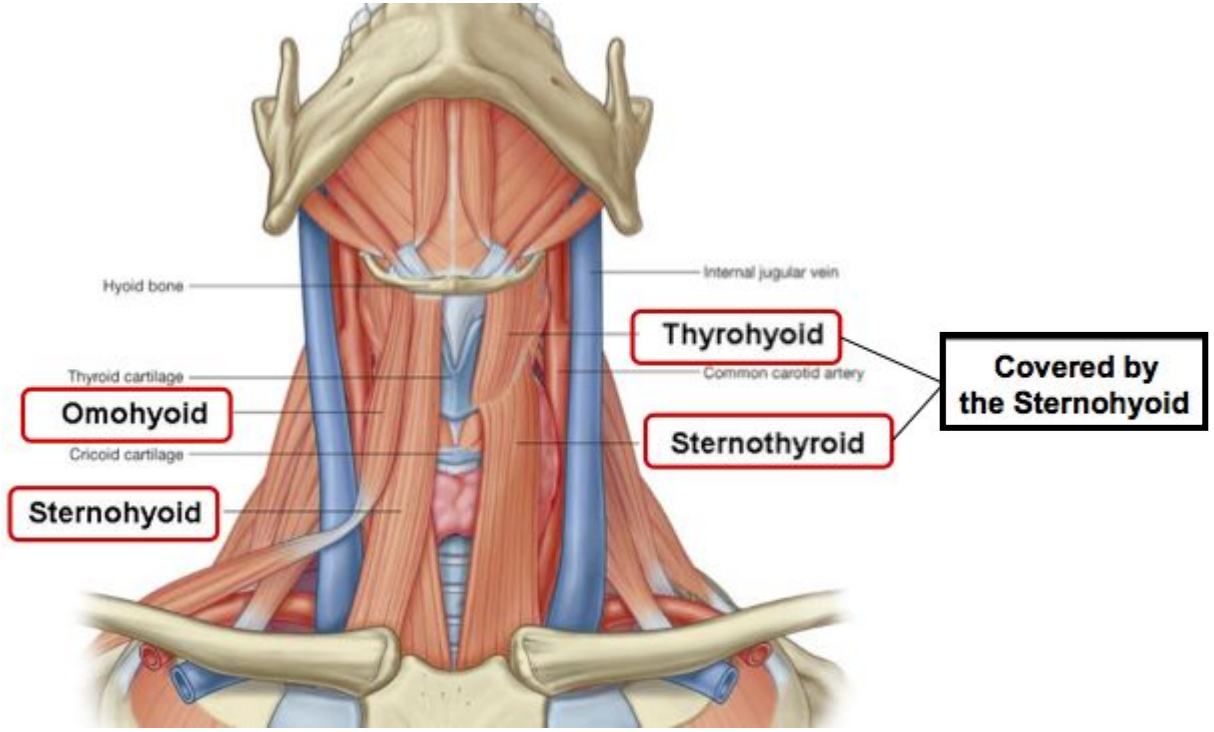
- **Attach superiorly to hyoid bone**

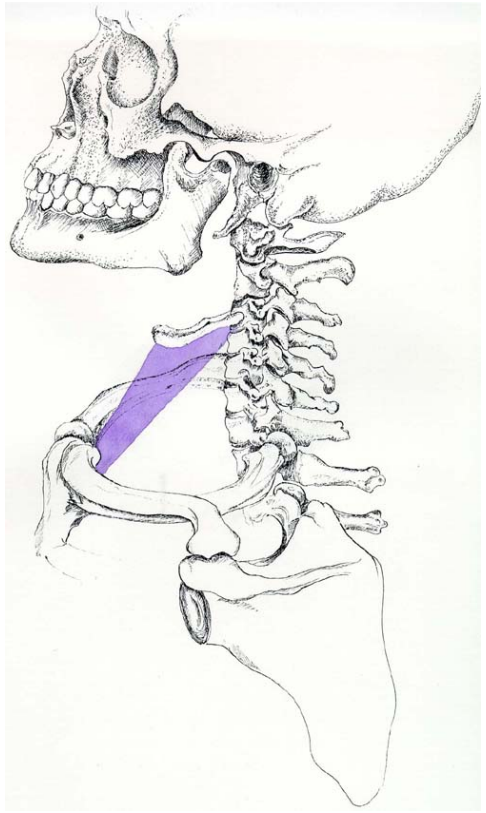
1. **Muscular portion** → **Infrahyoid muscles**

2. **Visceral portion** → **Cervical viscera**



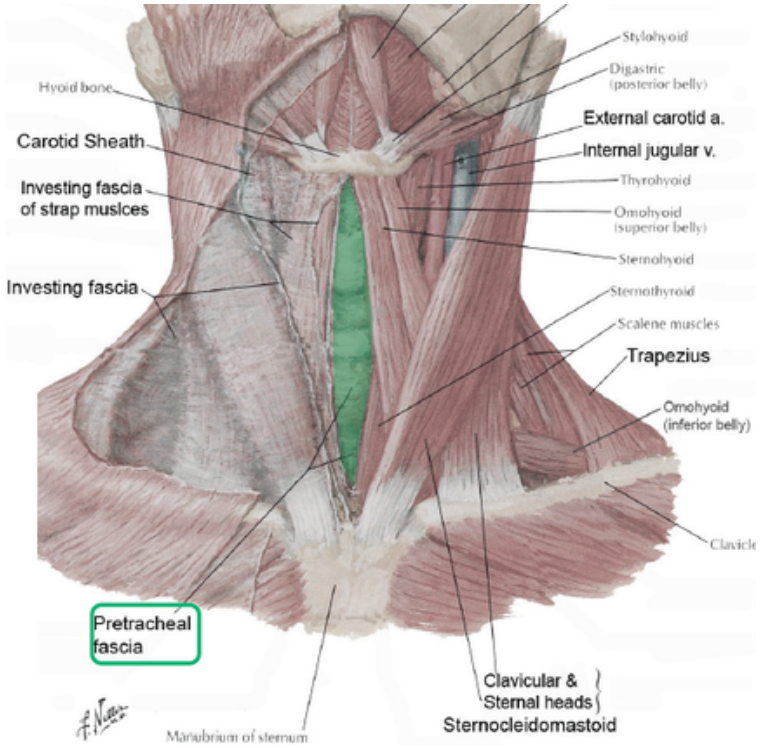
Muscular portion of pretracheal fascia

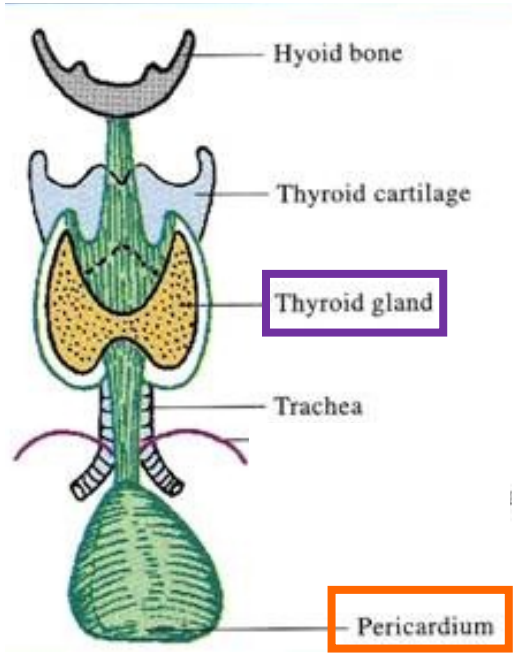


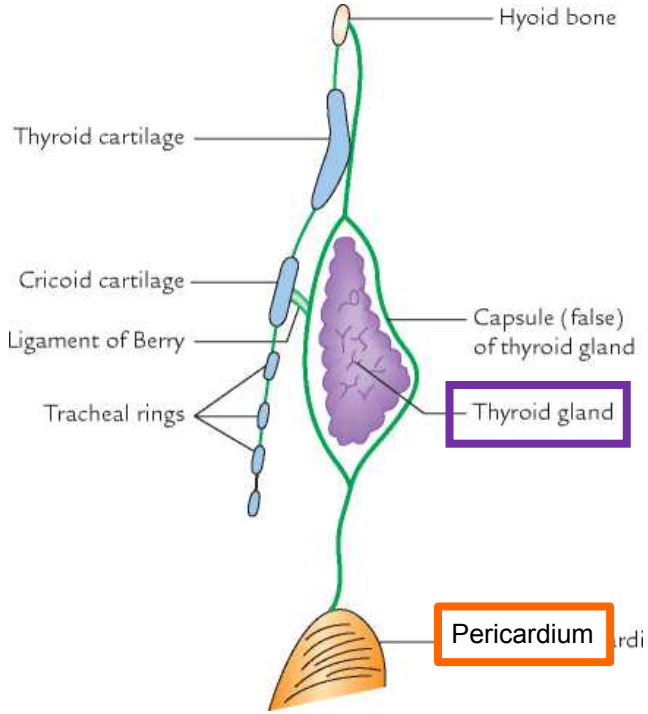


- **Surround infrahyoid muscles**
- **Attach to pericardium (inferiorly)**

Visceral portion of pretracheal fascia



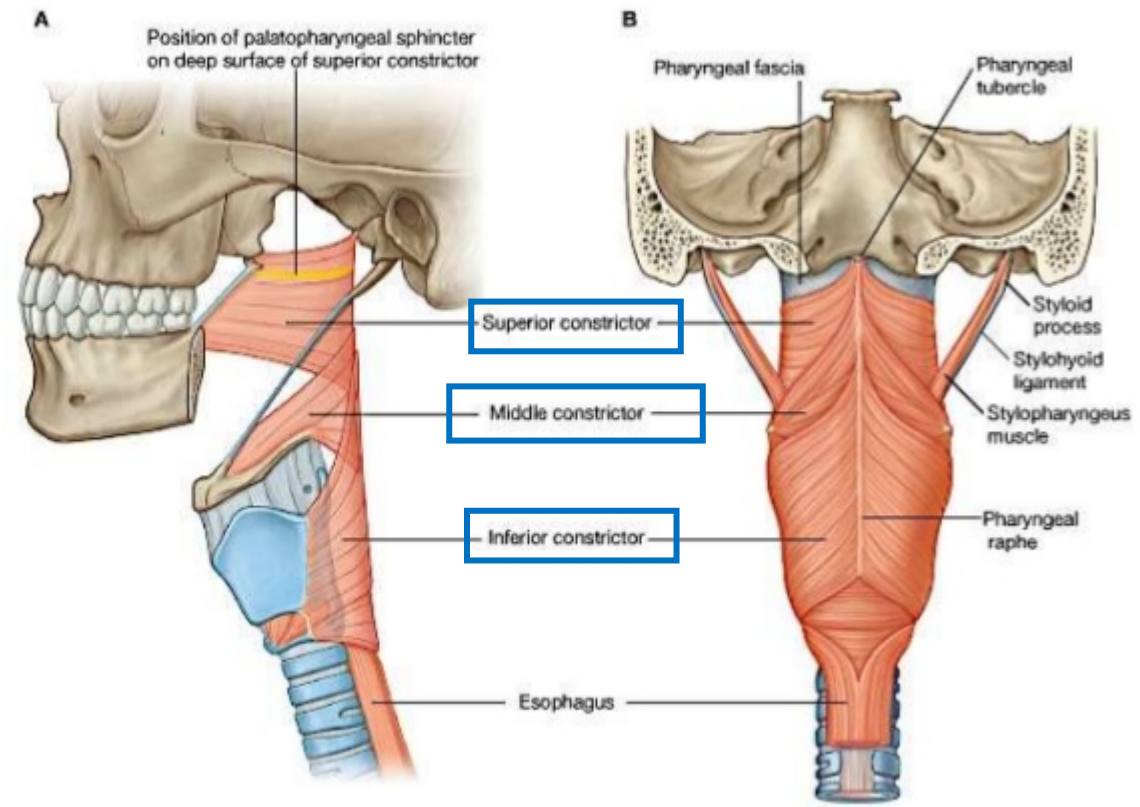


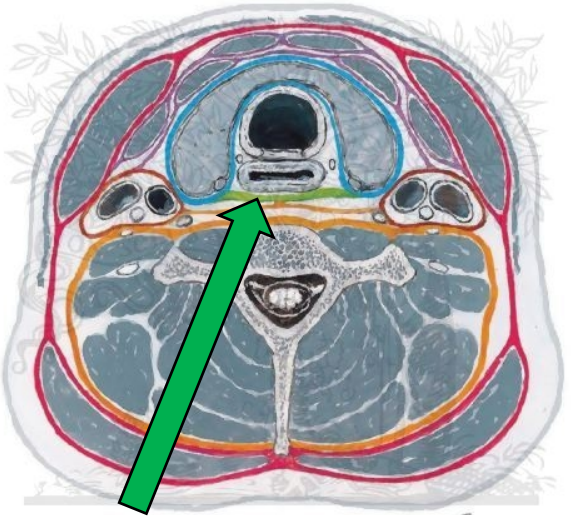


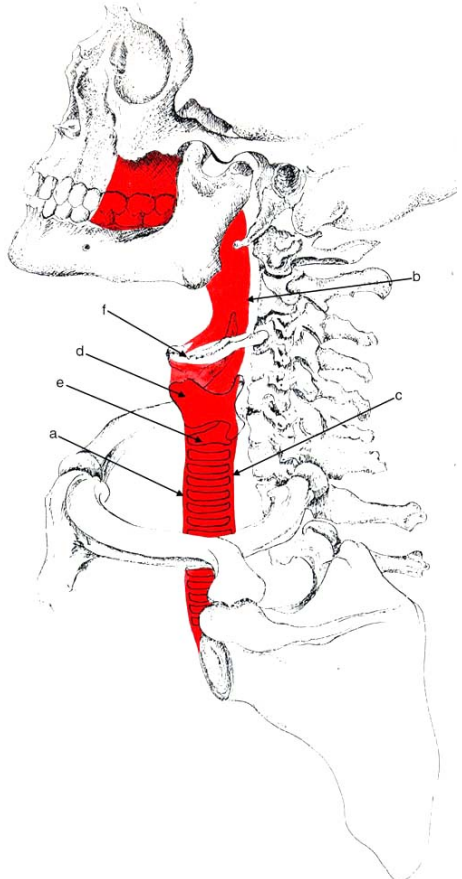
- **Form sheath of thyroid glands & attach to larynx**

*****Continue with fascial sheath of aorta & pericardium**

Buccopharyngeal fascia

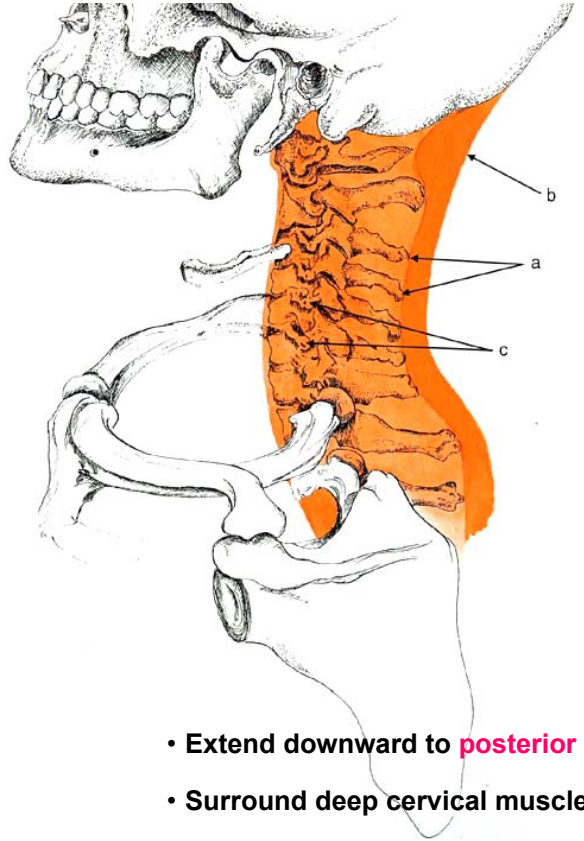


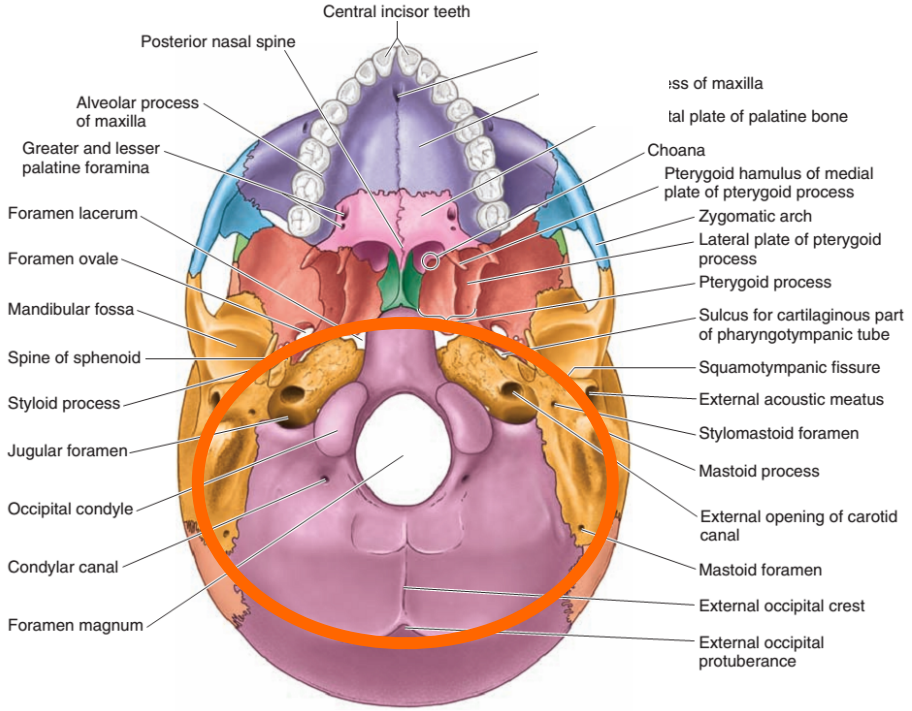


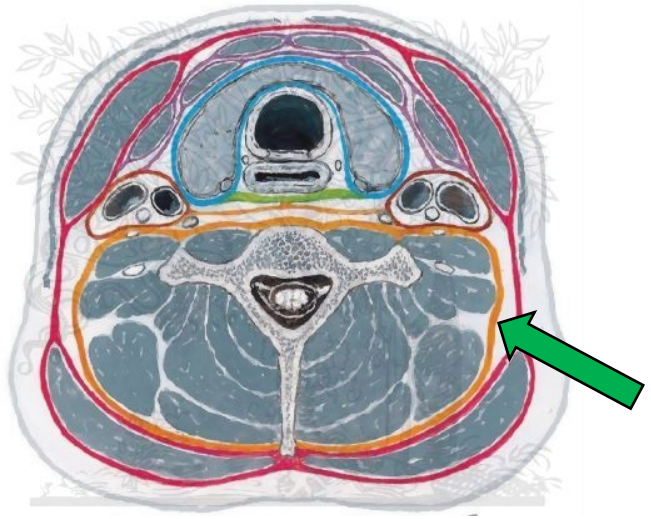


- **Attach superiorly to occipital bone**
- **Cover muscles of pharynx & posterior surface of esophagus, & buccinator muscle of cheek**

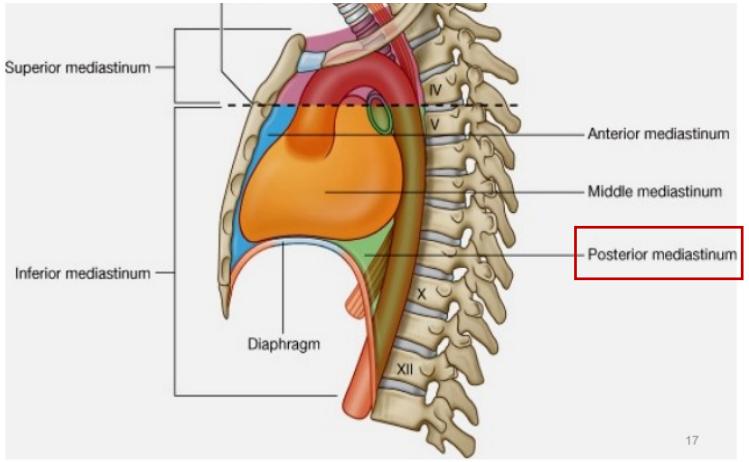
Prevertebral fascia



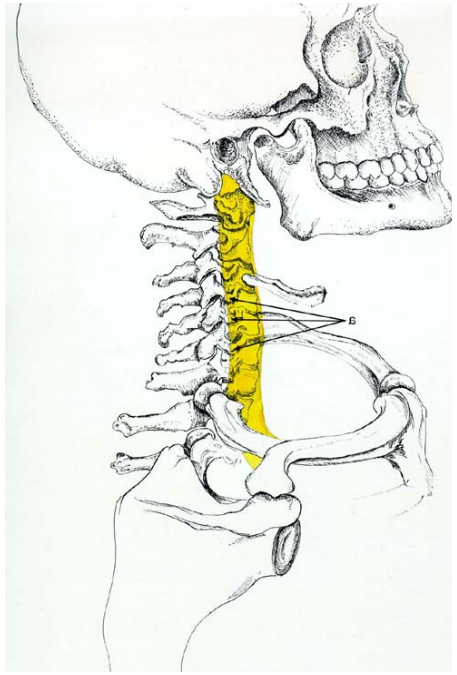


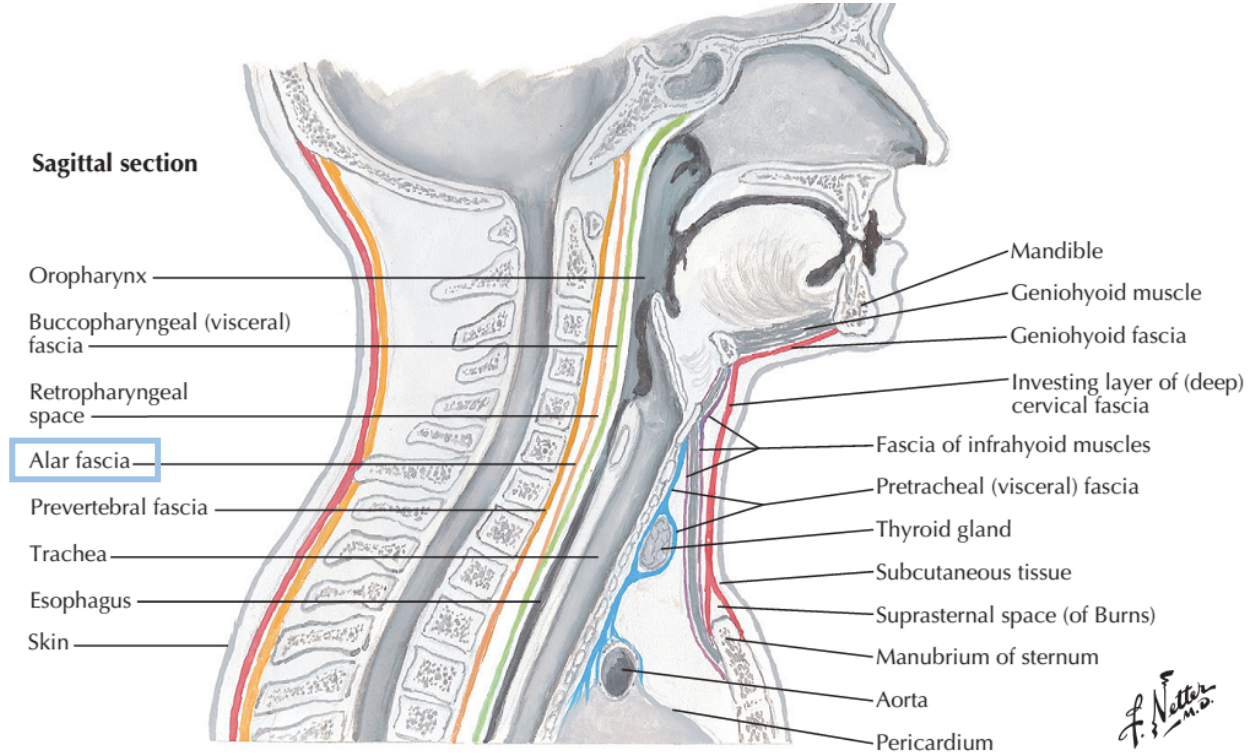


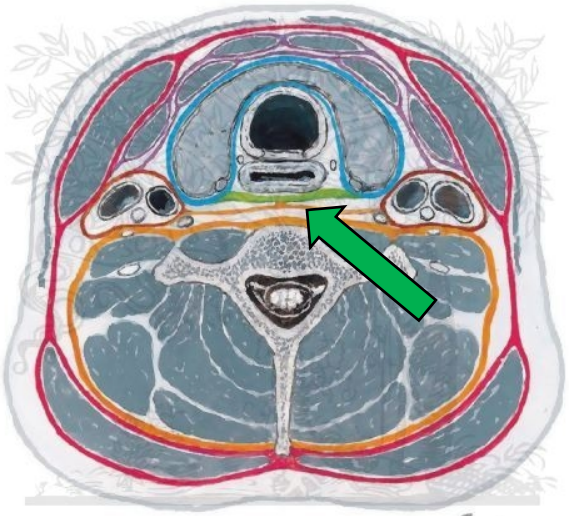
- **Extend downward to posterior mediastinum**
- **Surround deep cervical muscles**
- **Form Floor of posterior triangle of neck**



Alar fascia

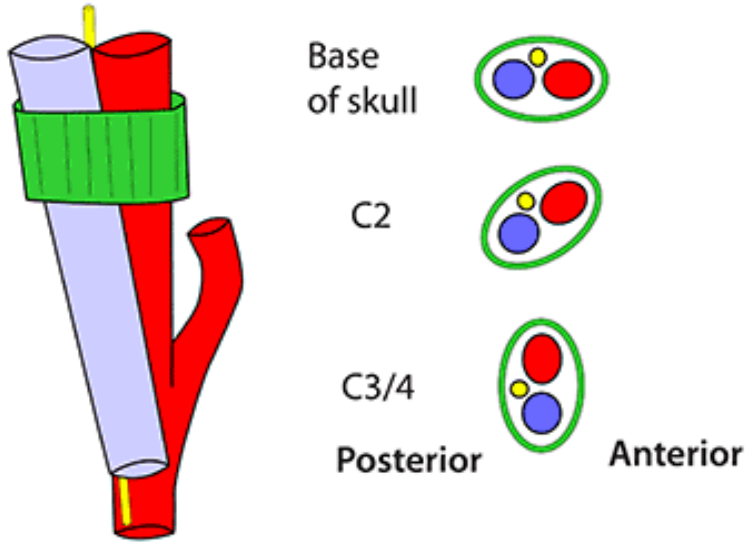


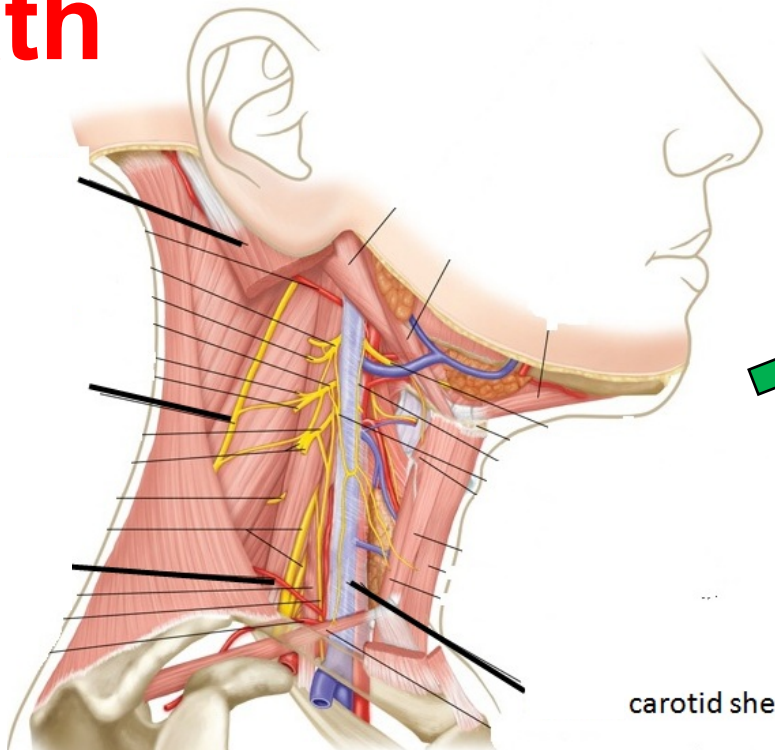


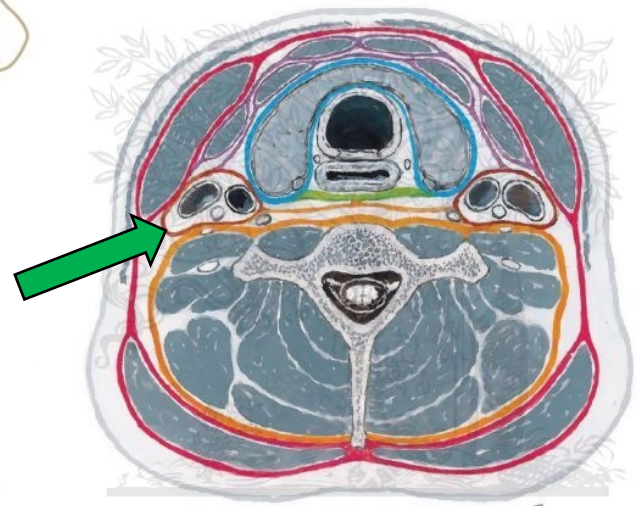


- **Thin fascia b/w prevertebral fascia & buccopharygeal fascia**
- **Attach to buccopharyngeal fascia at the level just below to CV7**

Carotid sheath

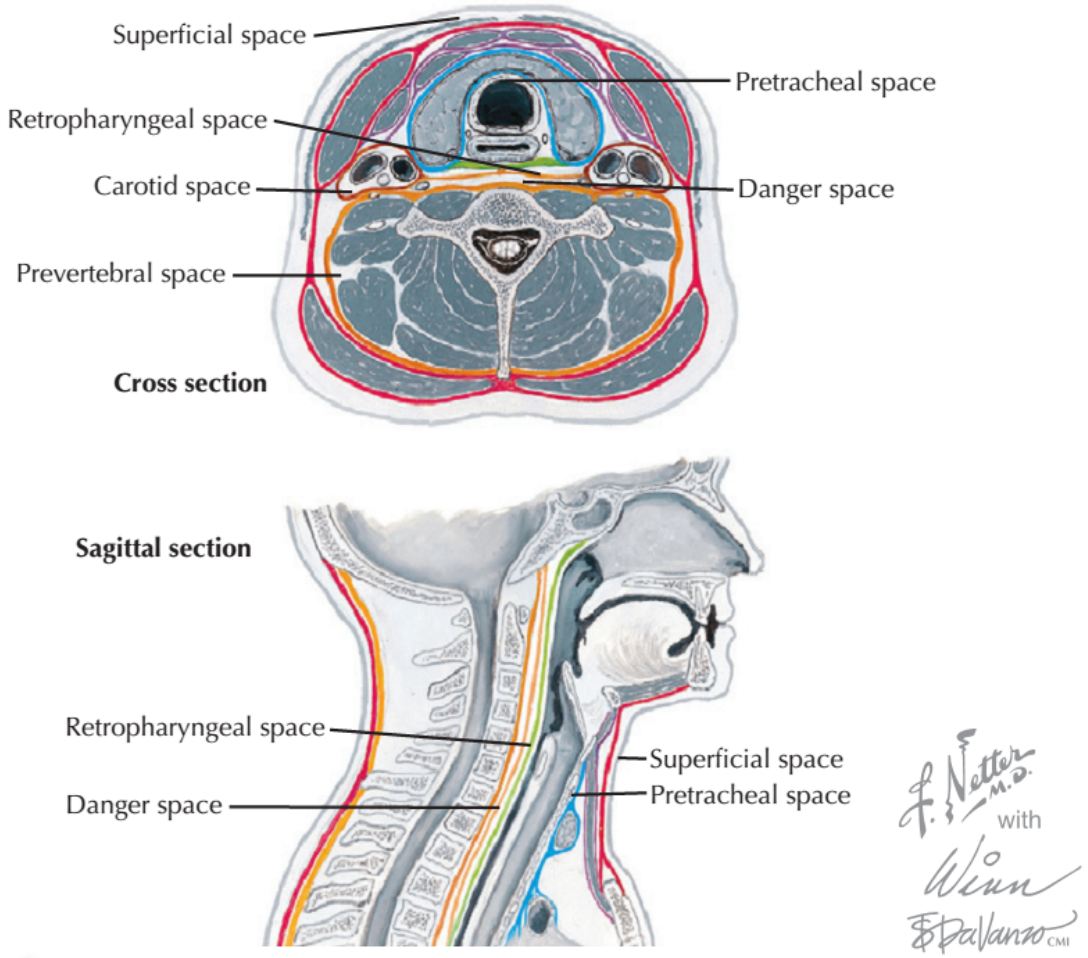






- **Extend from jugular foramen/carotid canal to root of neck**
- **<u>Contents</u>**
  - **Internal & Common carotid artery**
  - **Internal jugular vein**
  - **Vagus nerve (b/w vessels)**

Fascial spaces of the neck



- **Potential spaces b/w deep cervical fascia**
- **Allow spread of infection from H&N to mediastinum**

Retropharyngeal (Retrovisceral) space

1) **True retropharyngeal space**

   - b/w buccopharyngeal & alar fasciae

2) **Danger space**

   - b/w alar & prevertebral fasciae
   - Allow spread of infection to posterior mediastinum

