RADIOLOGICAL ANATOMY OF THE HEAD AND NECK

المدرس الدكتور : تارا فاروق كريم
كلية الطب / جامعة بغداد

- The pharynx and its related spaces.
- The oral cavity and the floor of the mouth.
- The larynx.
- The cervical Lymph nodes levels.

THE PHARYNX

- Is a muscular tube extending from the base of the skull to the lower border of the cricoid cartilage(C6) as it continue with the esophagus:
- Nasopharynx.
- Oropharynx.
- Hypopharynx.

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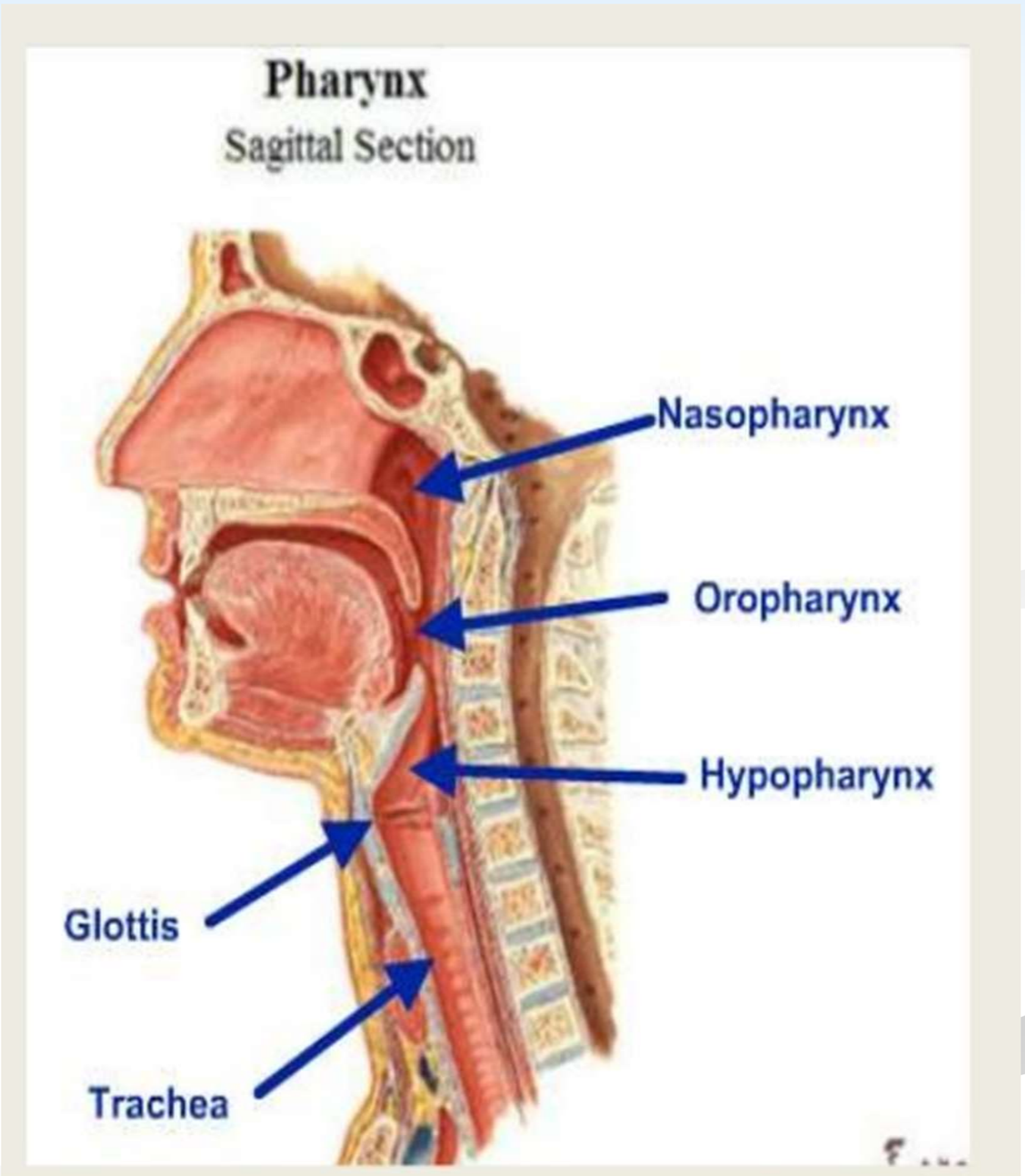
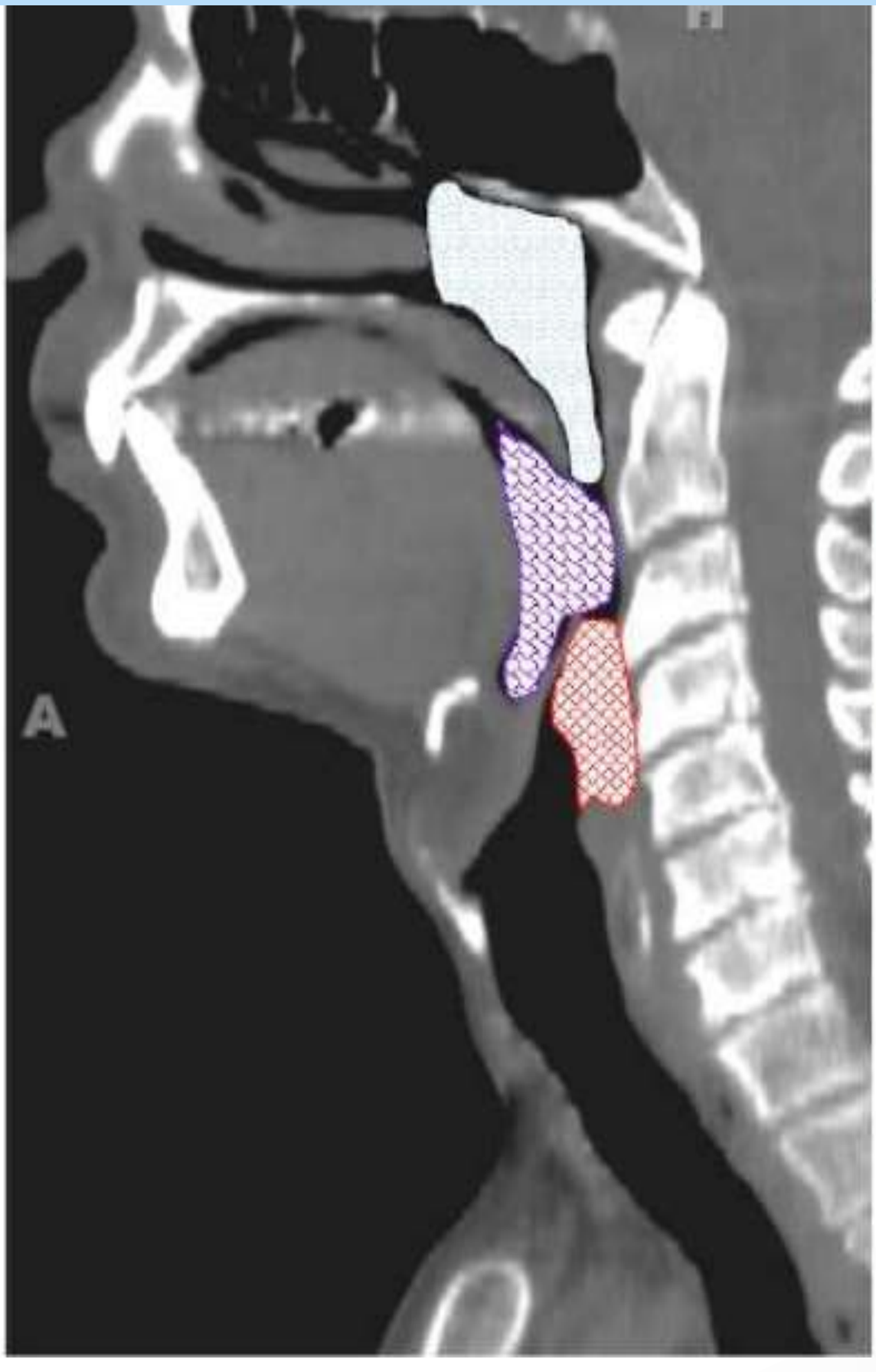



A

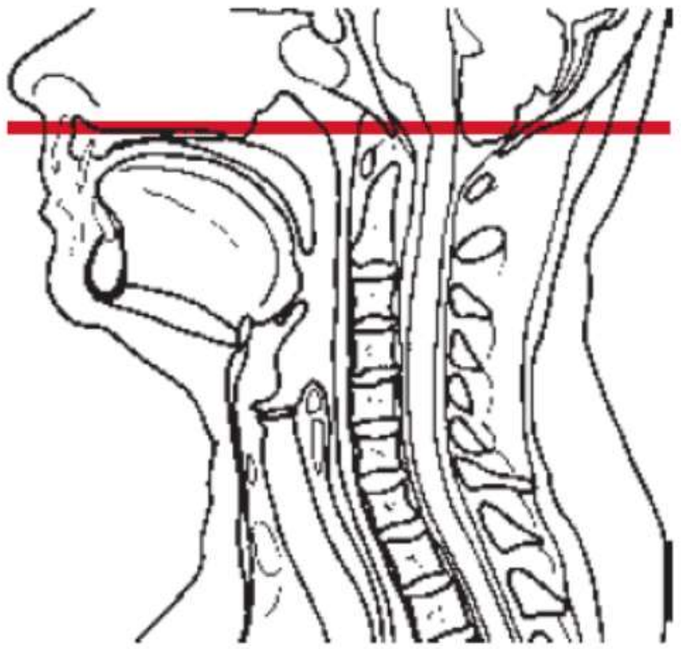

A
ITM
SP
GG
M
V
C7
T
T1

THE NASOPHARYNX , OROPHARYNX AND RELATED SPACES

- The nasopharynx is that part of the pharynx between the posterior choncae and the lower limit of the soft palate
- Posteriorly it lies on the upper cervical vertebrae and longus collis and capitus.

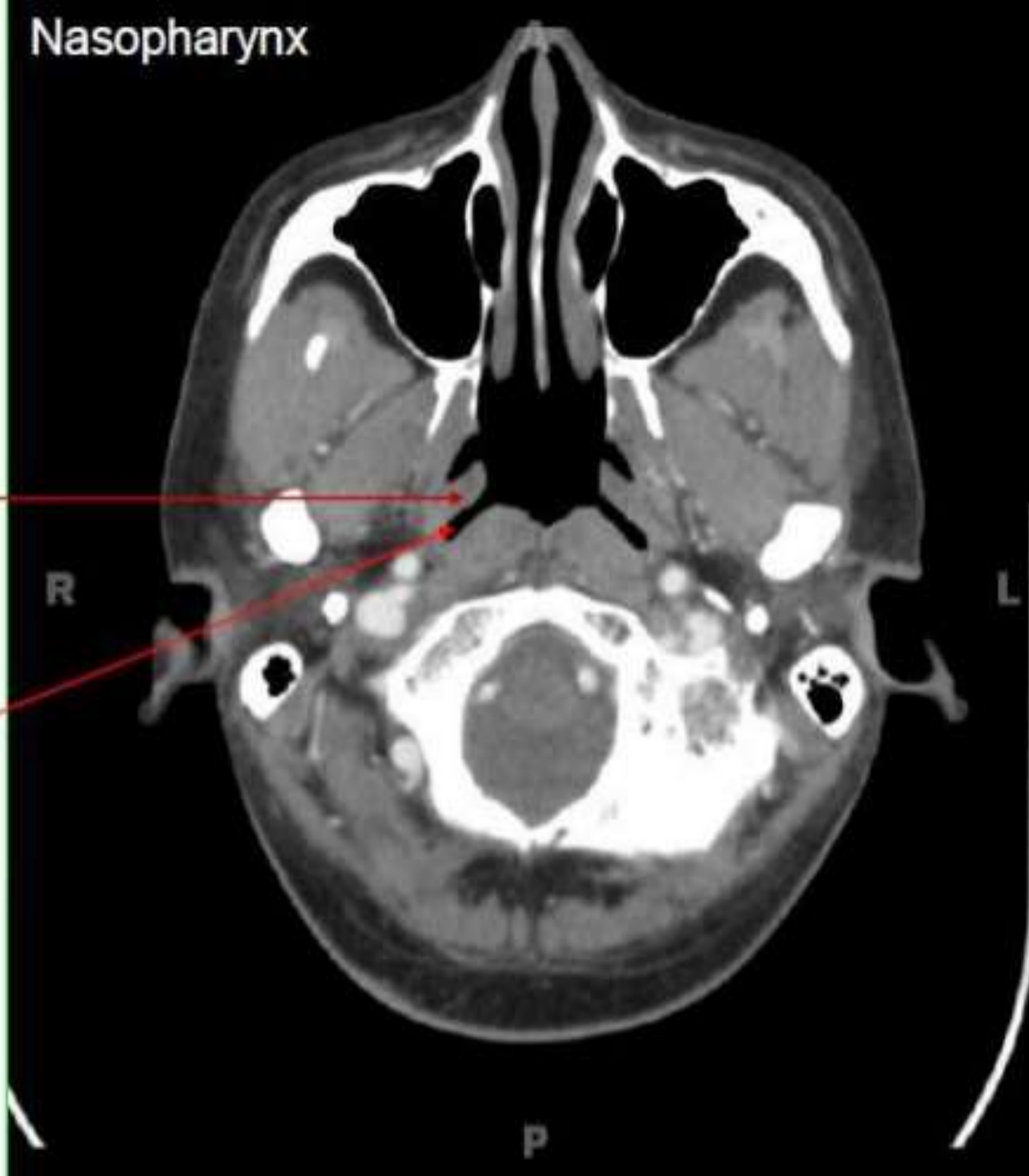
Axial T1 MR

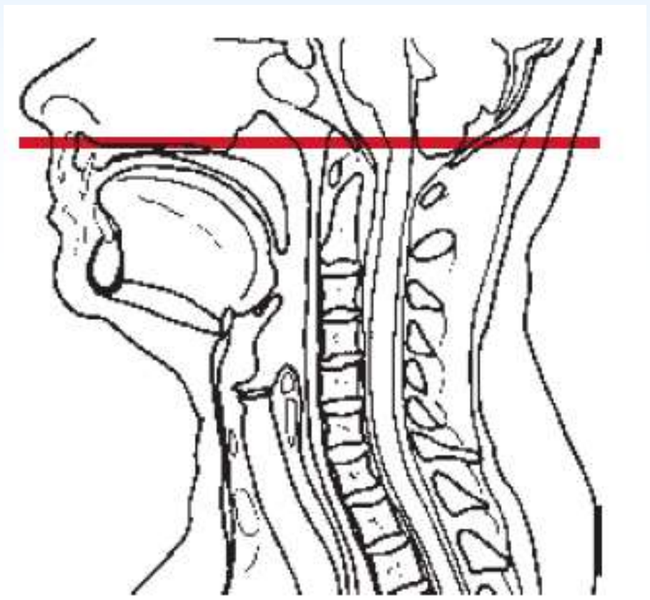

Eustachian tube opening
Torus tubarius
Tensor veli palatini muscle
Levator veli palatini muscle
Prevertebral muscle
Adenoids
Clivus
Pharyngeal mucosal space
Masticator space
Parapharyngeal space
Prevertebral component, perivertebral space



Torus Tubarius

Lateral pharyngeal recess



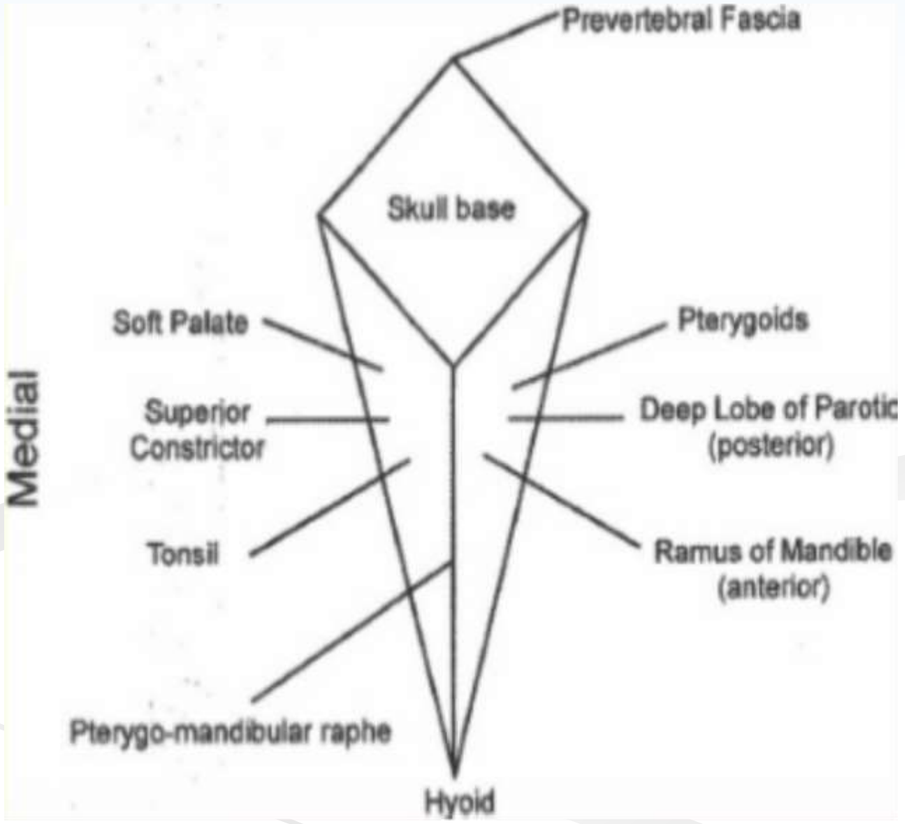


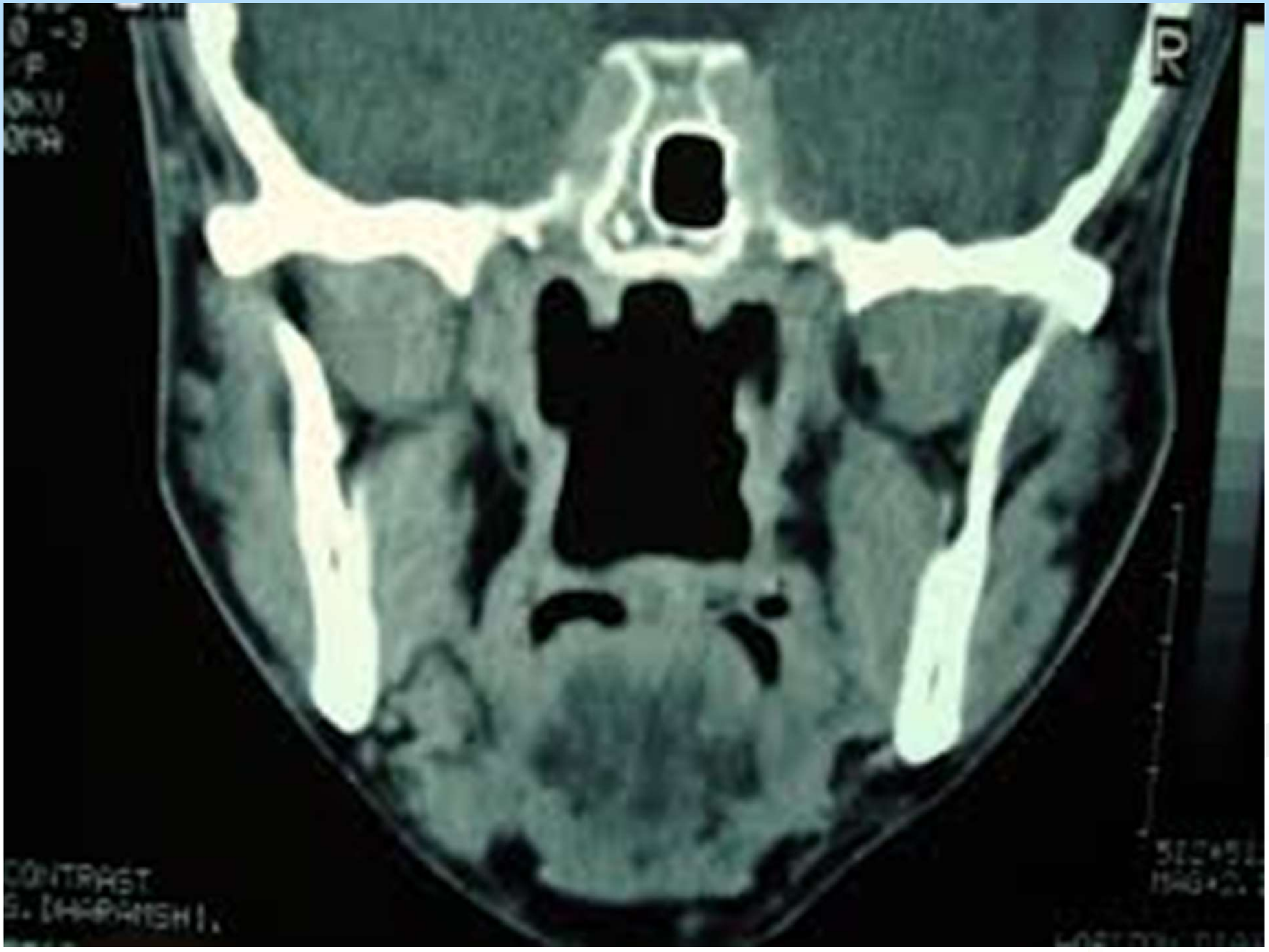
RELATED SPACES

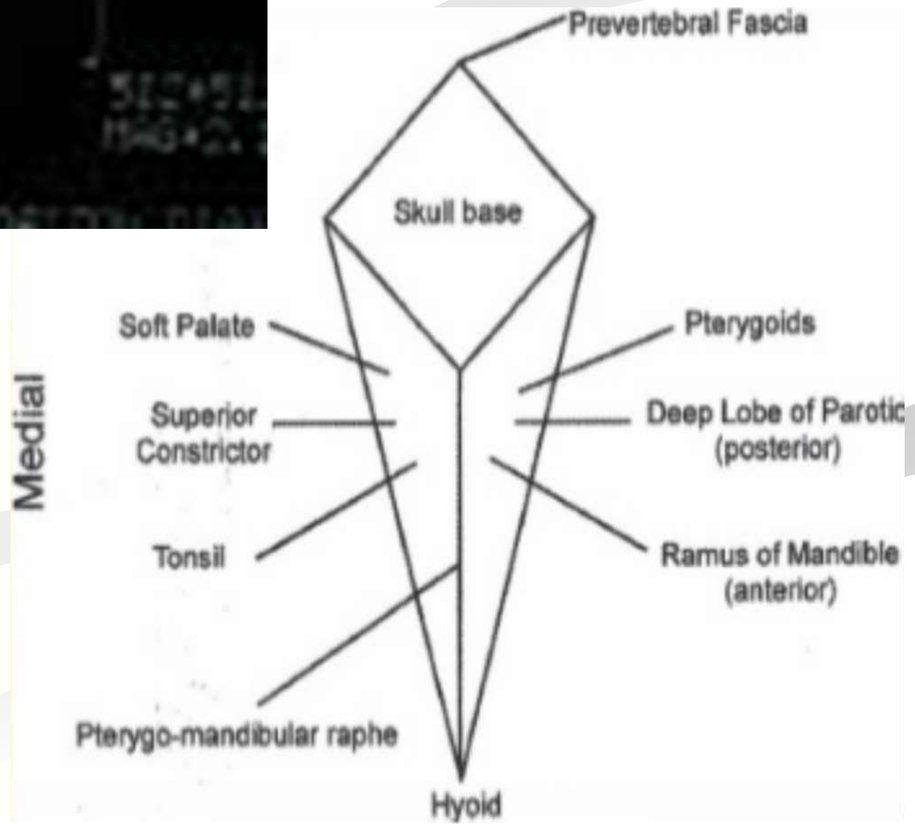
- Para pharyngeal space.
- Masticator space.
- Pharyngeal mucosal space.
- Parotid space.
- Carotid space.
- Buccal space

The parapharyngeal space

- The parapharyngeal space is shaped like an inverted pyramid lateral to the nasopharynx and extend from the base of the skull to the hyoid bone.
- Anterolaterally, lies the masticator space.
- Posteriorly; it is separated from the carotid sheath by the styloid process.
- The deep part of the parotid gland lies laterally.




R
CONTRAST


Prevertebral Fascia
Skull base
Soft Palate
Pterygoids
Medial
Superior Constrictor
Deep Lobe of Parotic (posterior)
Tonsil
Ramus of Mandible (anterior)
Pterygo-mandibular raphe
Hyoid

Parapharyngeal space (PPS)

- Contents:
  - Fat, minor salivary glands and vessels (internal maxillary and ascending pharyngeal arteries and ptrygoid plexus of veins).
  - No mucosa, muscles, nodes, bones.
- Pathology:
  - Rarely diseases can originate within. Minor salivary gland tumors, lipoma may be.
  - To say it is from PPS, it should be completely surrounded by fat.

Pharyngeal mucosal

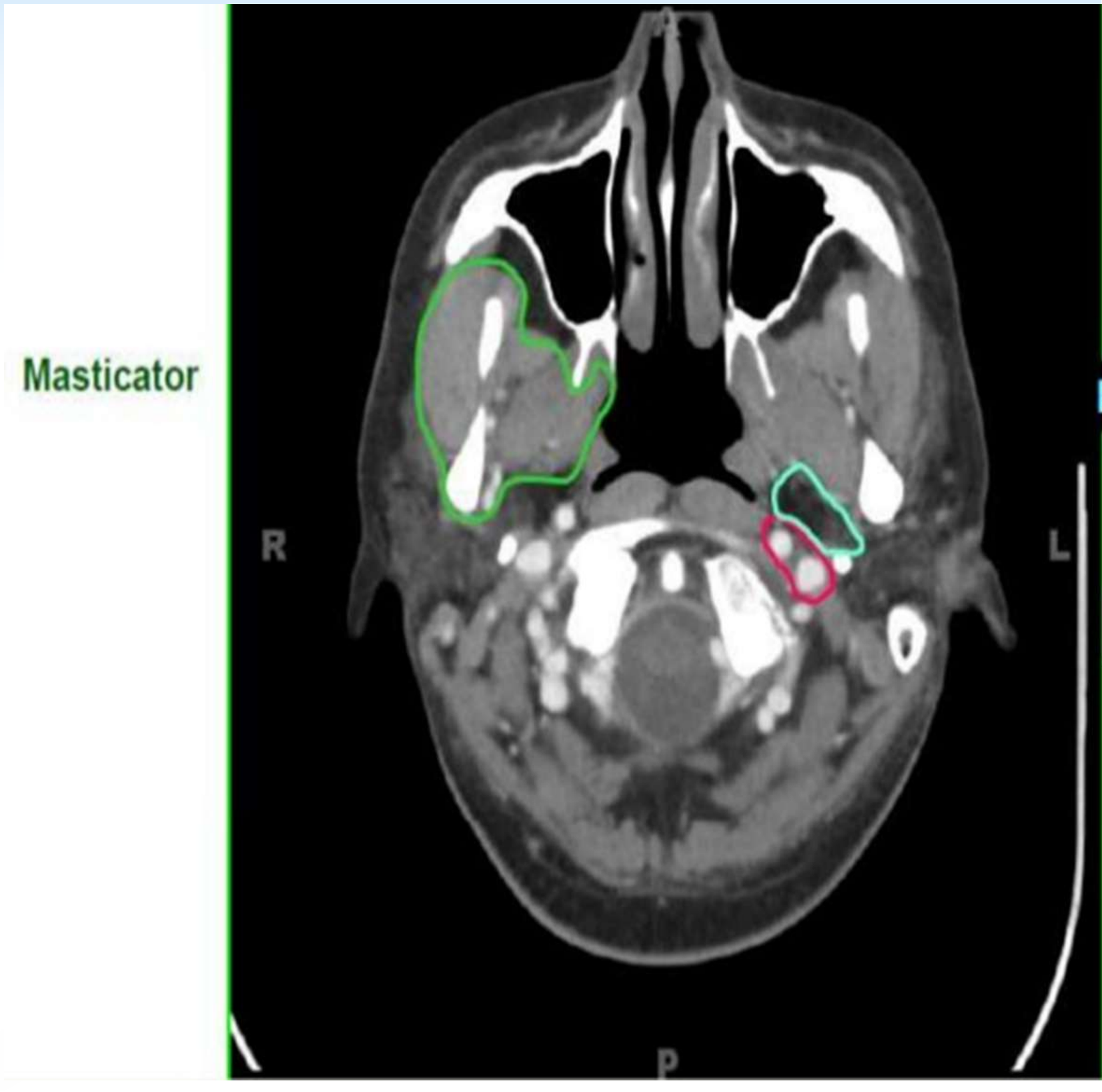
Parotid

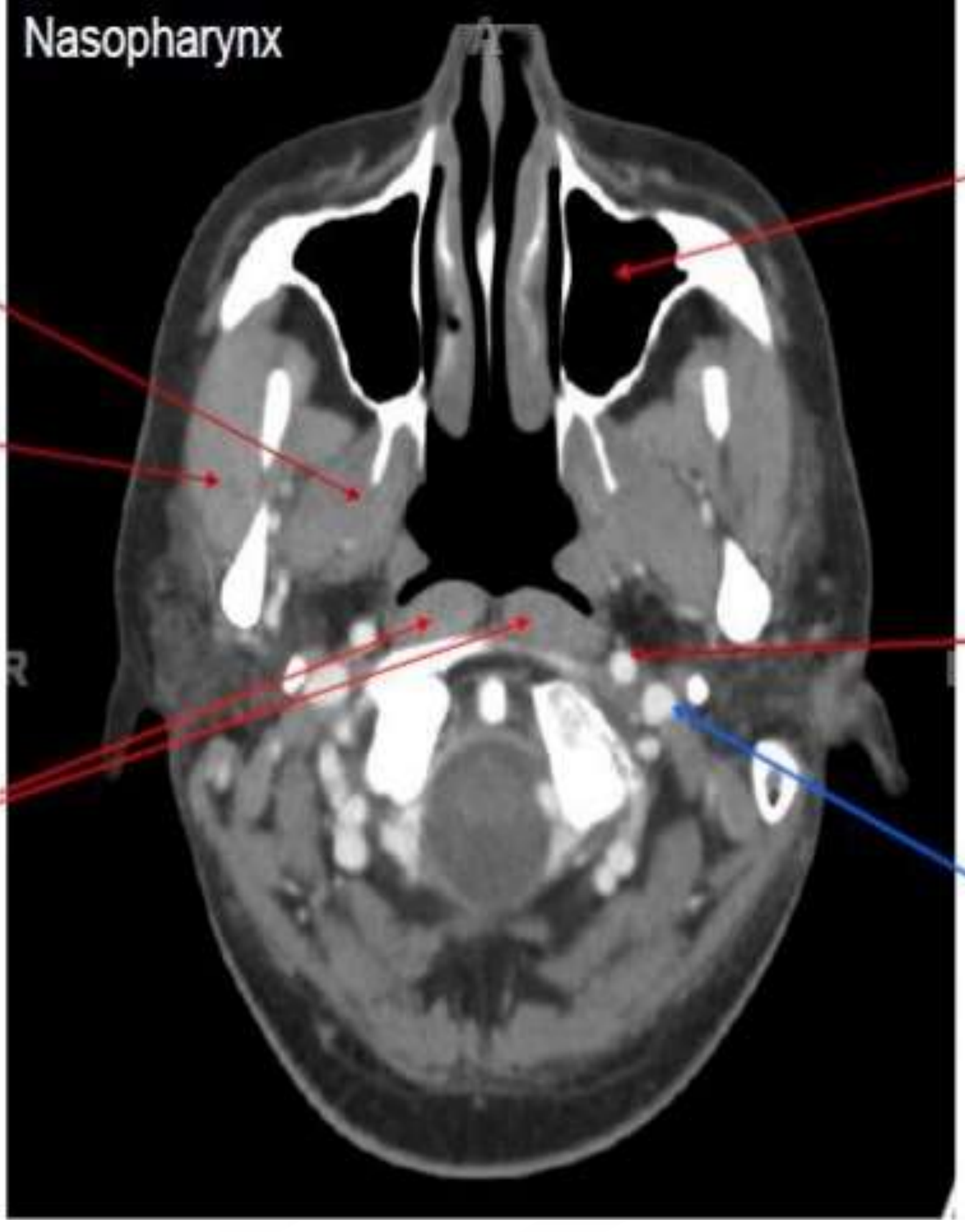
Parapharyngeal

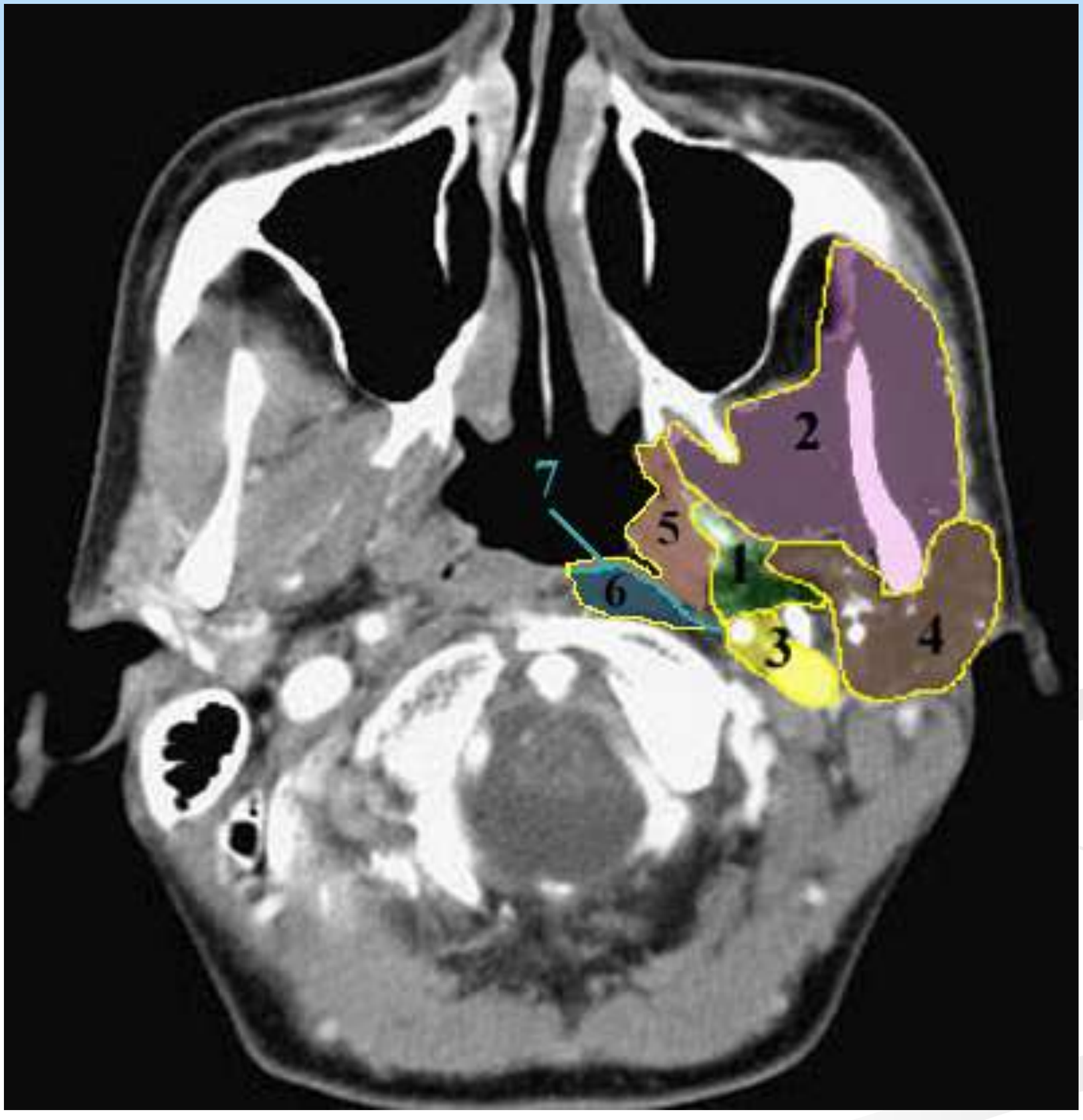
Carotid

The Masticator Space

- This space contains the mandible, the muscles of mastication, and the mandibular division of the trigeminal nerve.



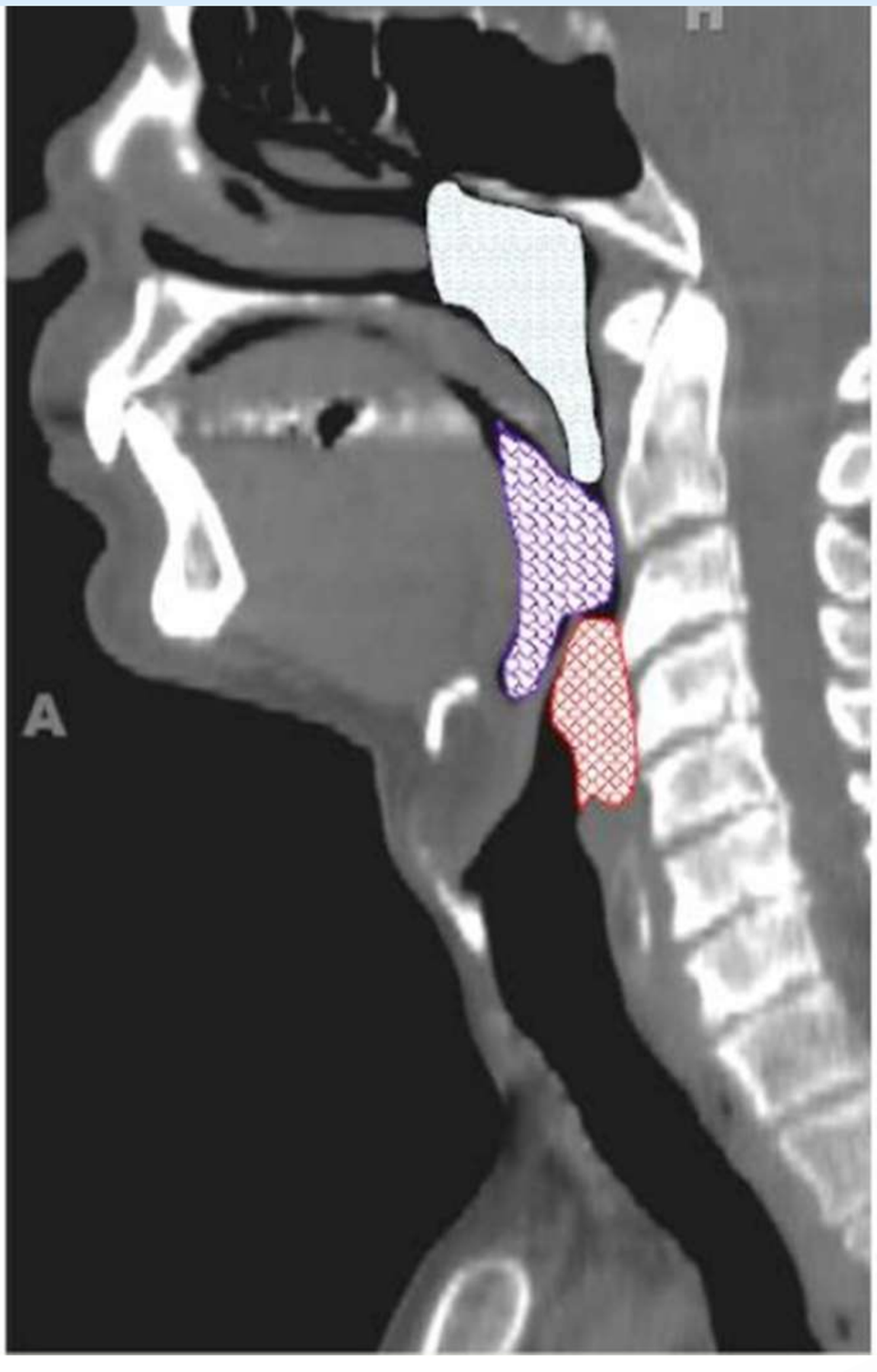

Nasopharynx
Pterygoid muscles
Masseter muscle
Longus Colli
Maxillary sinus
Internal Carotid artery
Internal jugular vein



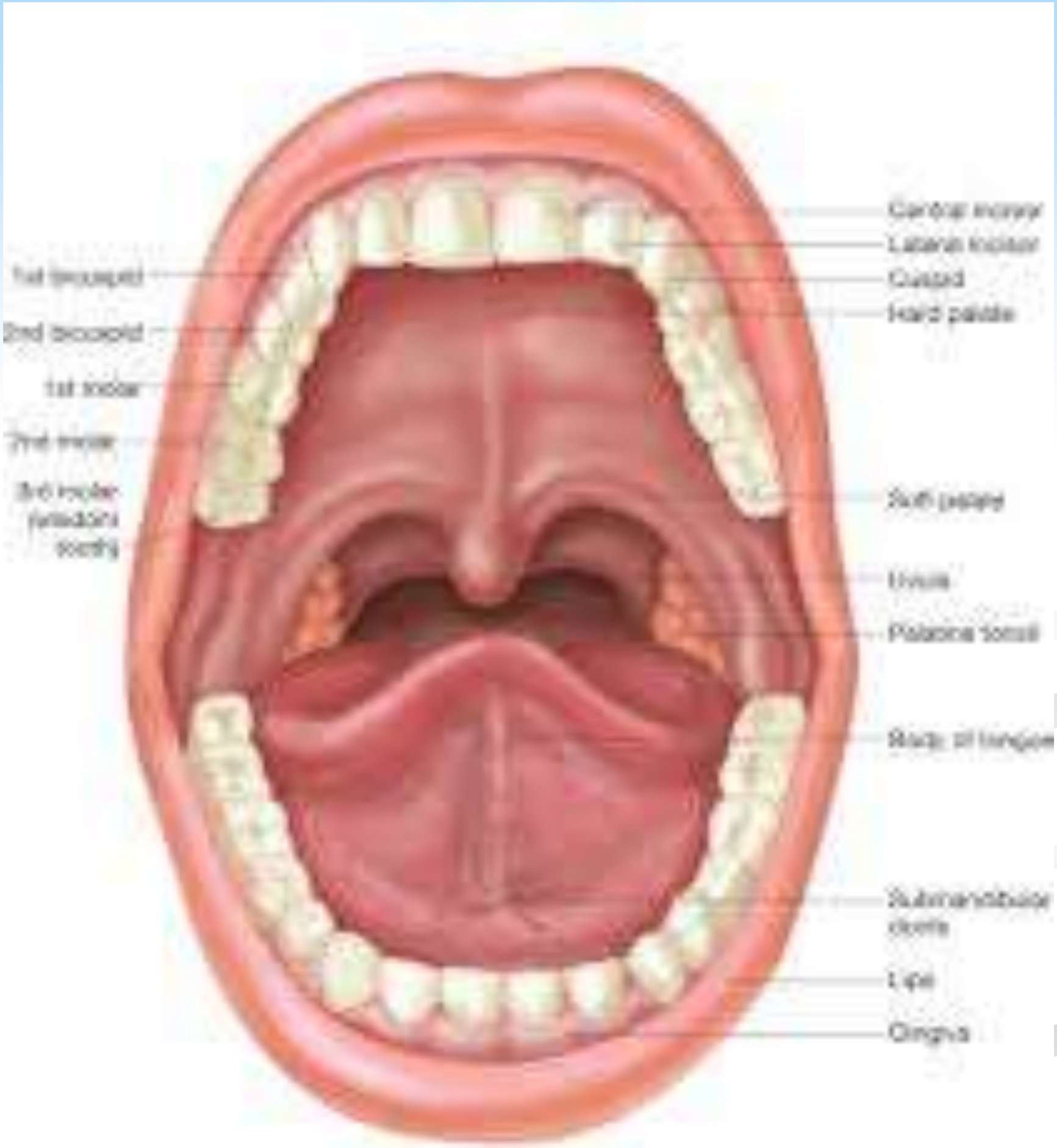
Contrast enhanced CT

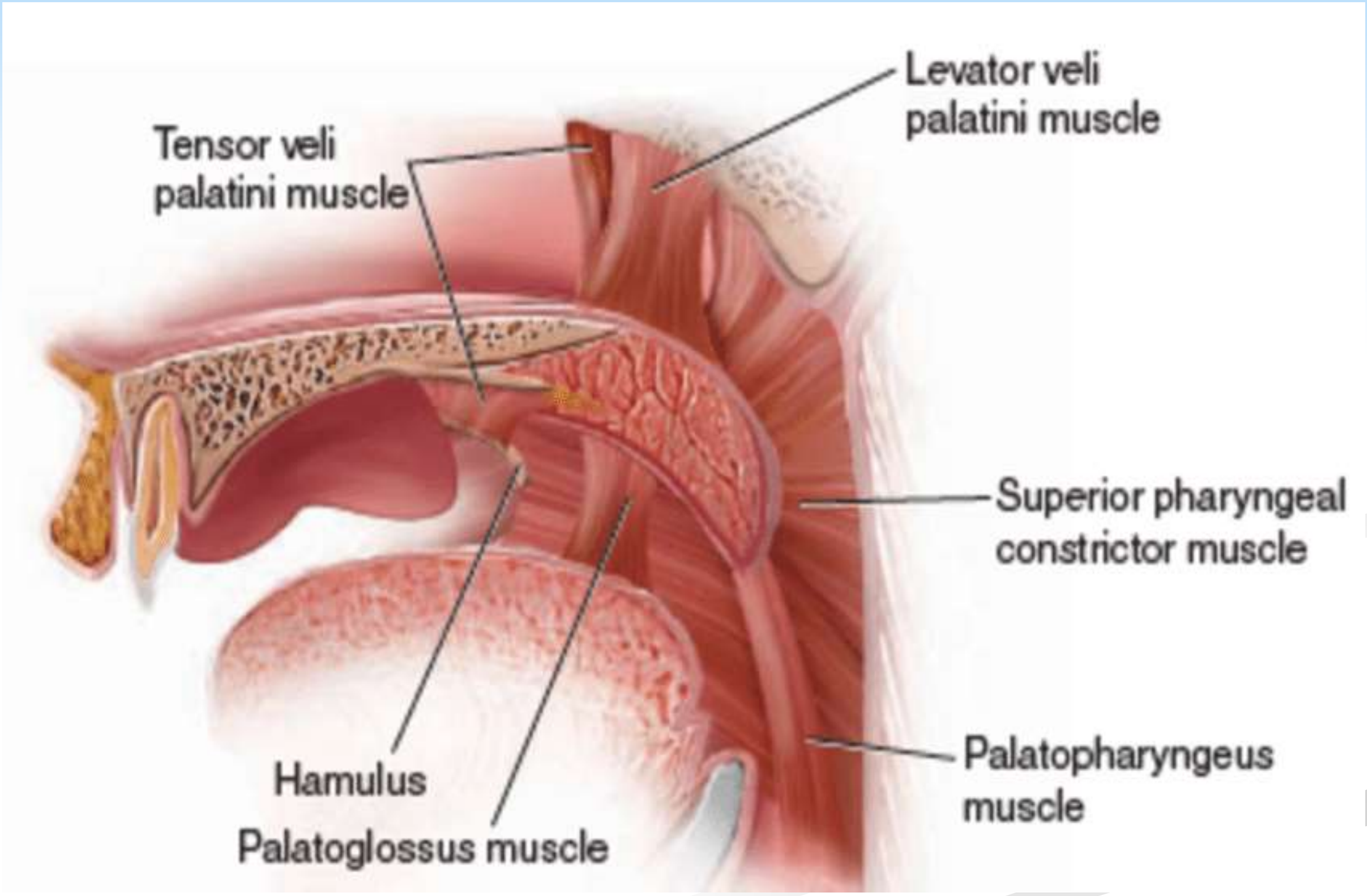
1 Parapharyngeal space. 2 Masticator space. 3 Carotid space 4 Parotid space. 5 Mucosal space. 6 Perivertebral space (anterior portion). 7 Retropharyngeal space (virtual at this level).

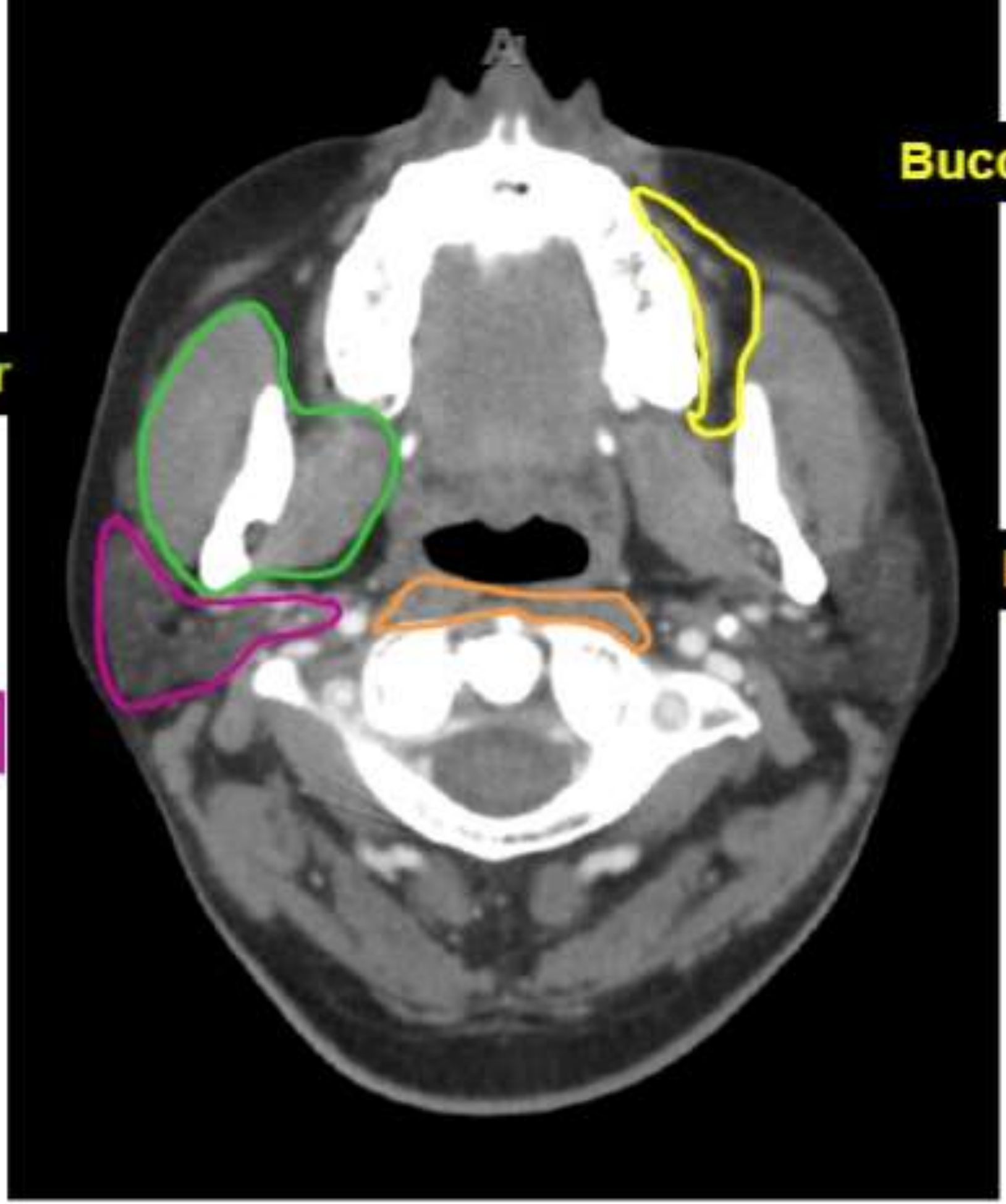
The oropharynx



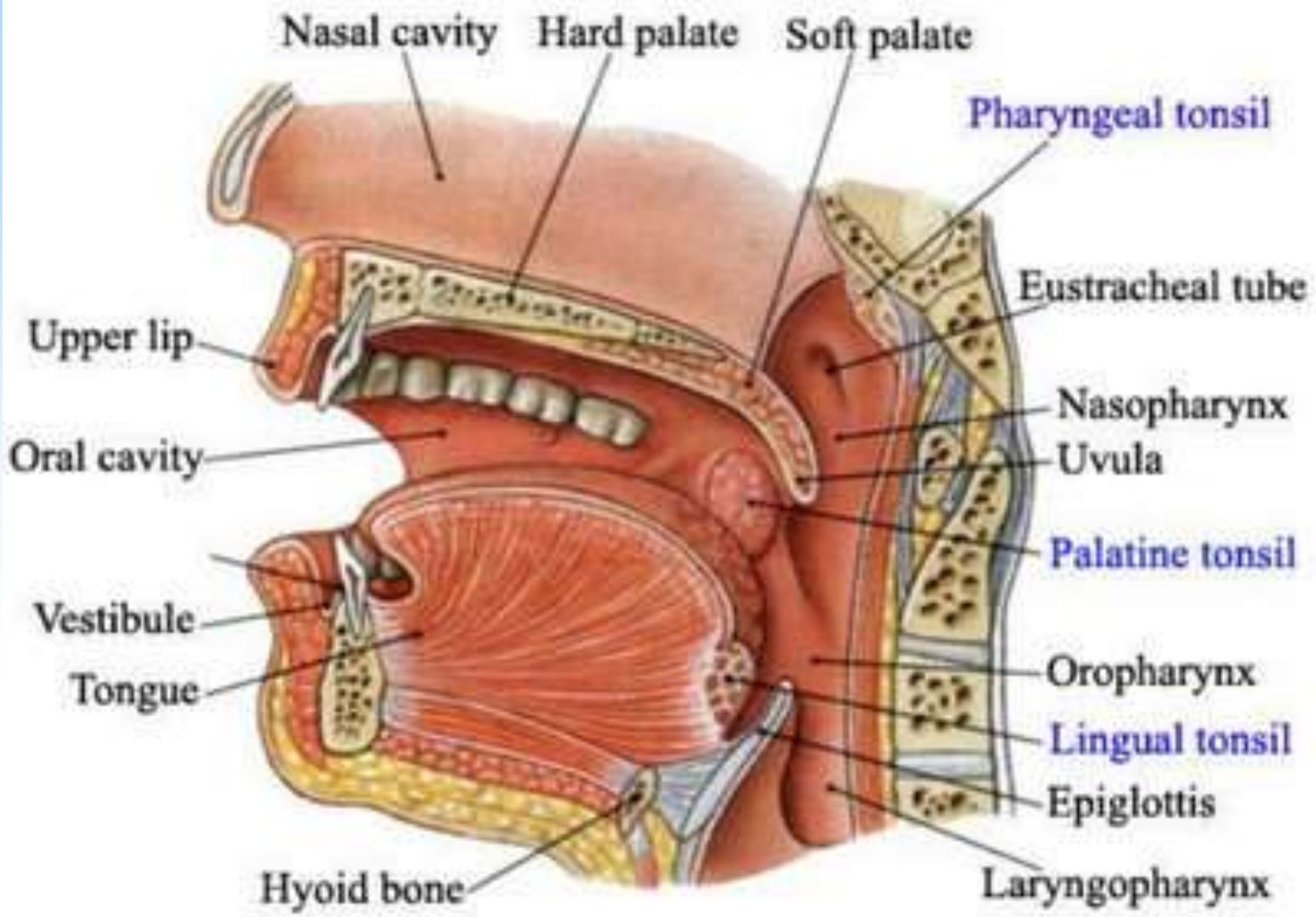
- **Boundaries:**
- anteriorly: base of the tongue , lingual tonsils
- posteriorly: posterior pharyngeal wall
- superiorly: elevated soft palate
- inferiorly: valleculae
- laterally: palatine tonsils

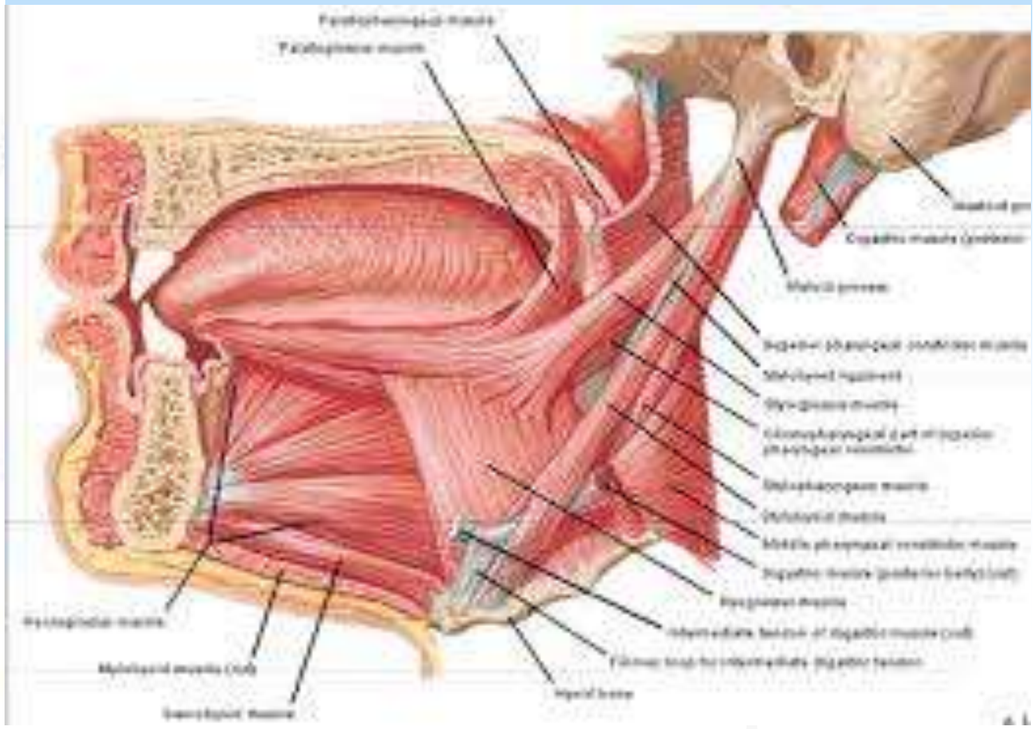

Central incisor
Lateral incisor
Canine
Hard palate
Soft palate
Uvula
Palatine tonsil
Root of tongue
Sublingual caruncle
Lips
Gingiva

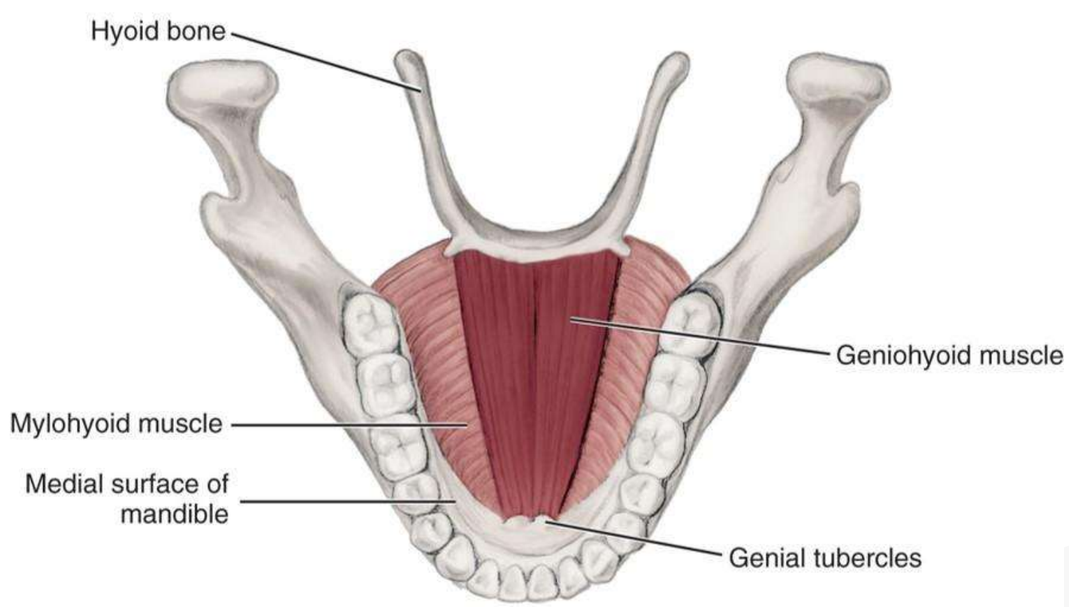

Levator veli palatini muscle
Tensor veli palatini muscle
Superior pharyngeal constrictor muscle
Palatopharyngeus muscle
Hamulus
Palatoglossus muscle

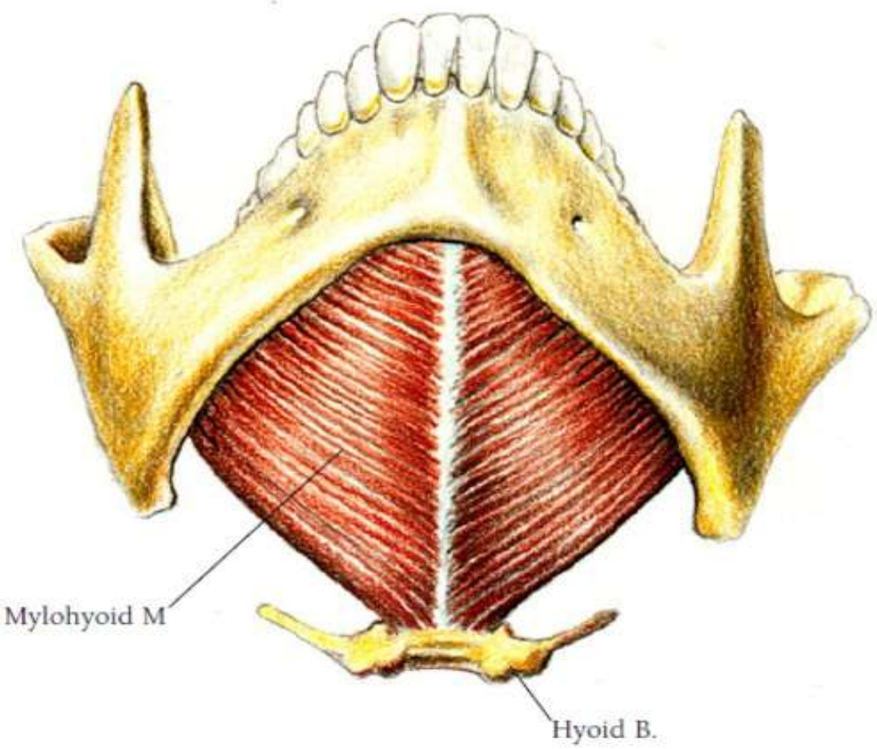

Buccal
Masticator
Prevertebral
Parotid

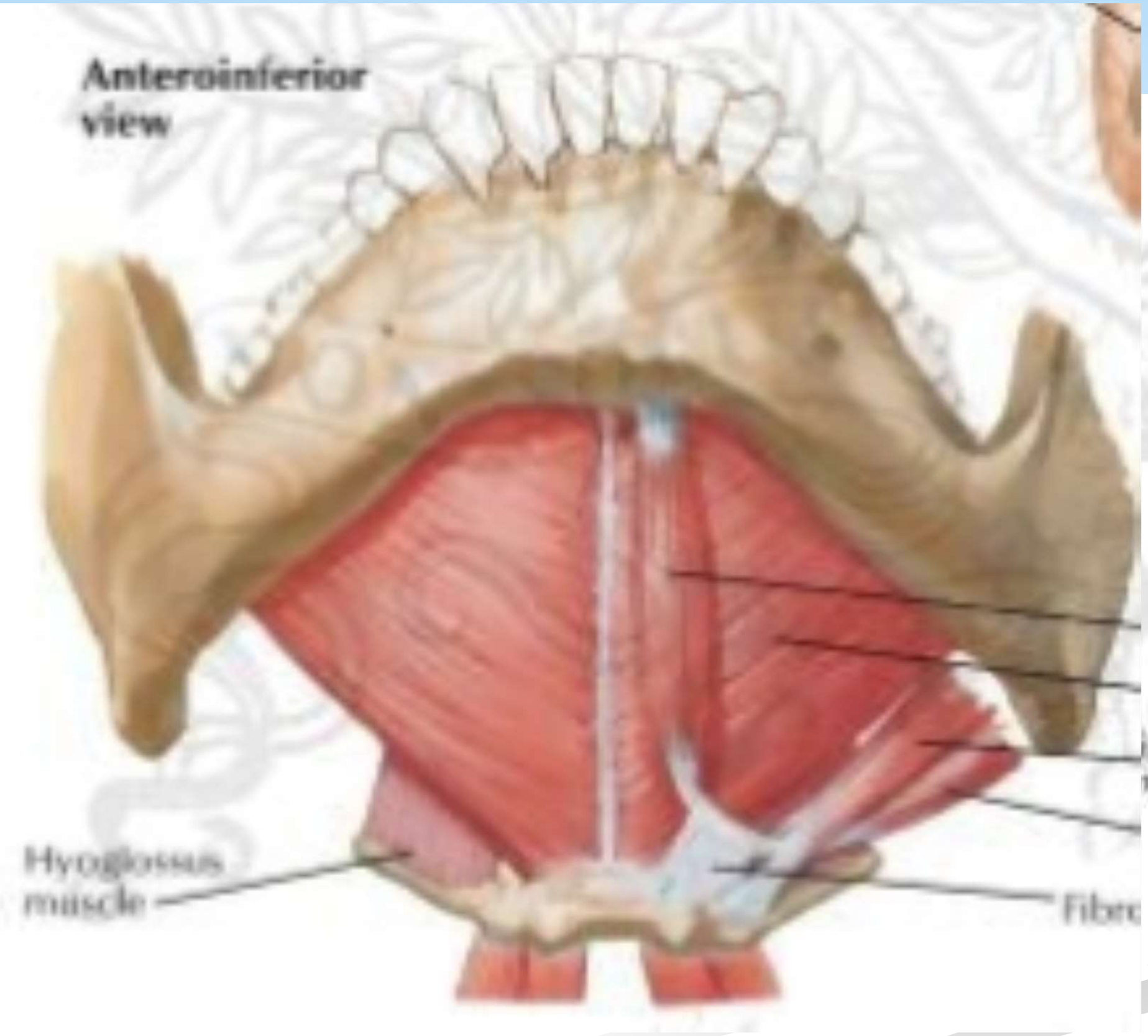
THE ORAL CAVITY


Nasal cavity
Hard palate
Soft palate
Pharyngeal tonsil
Eustracheal tube
Upper lip
Nasopharynx
Oral cavity
Uvula
Palatine tonsil
Vestibule
Tongue
Oropharynx
Lingual tonsil
Epiglottis
Hyoid bone
Laryngopharynx



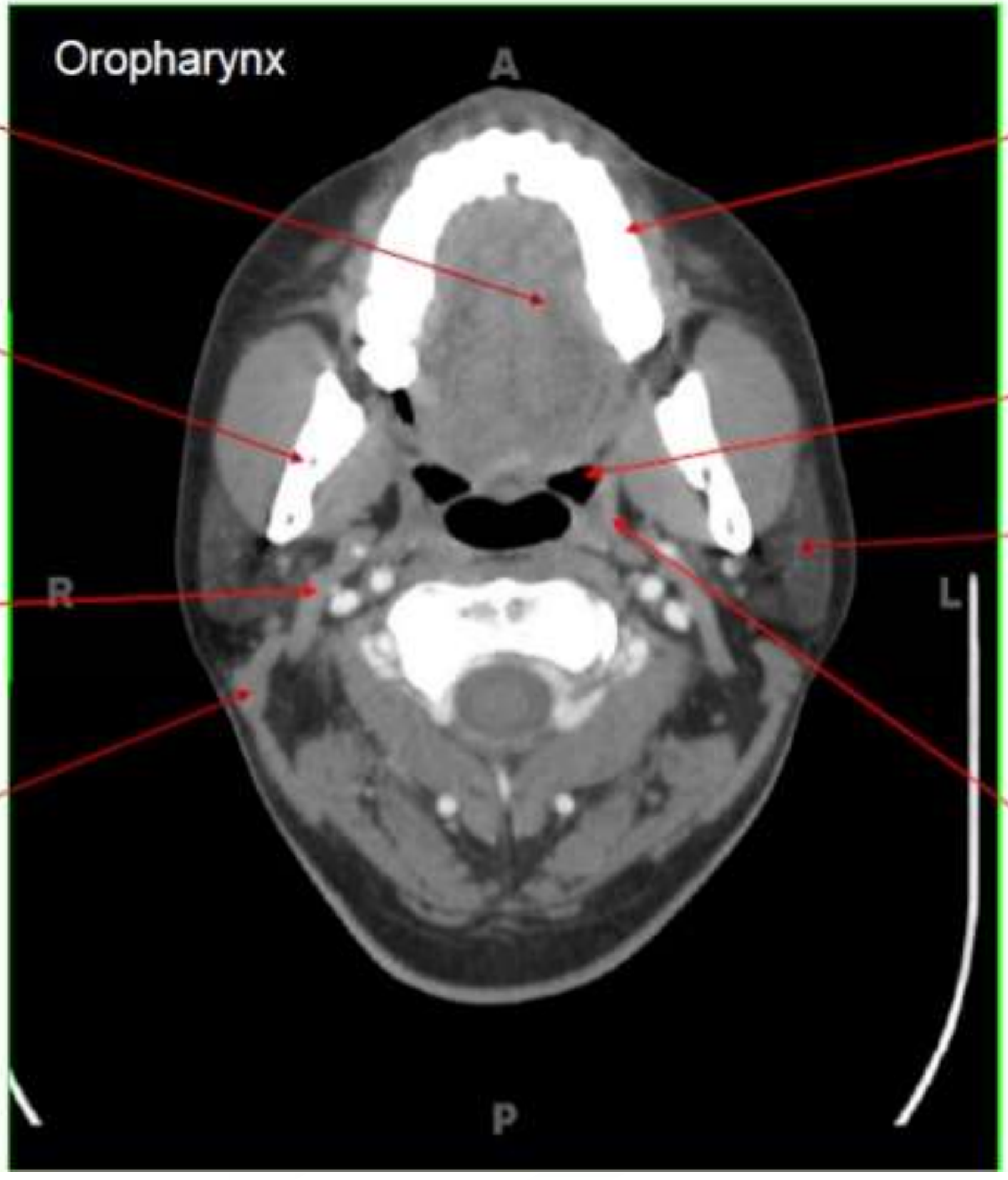

Hyoid bone
Geniohyoid muscle
Mylohyoid muscle
Medial surface of mandible
Genial tubercles


Mylohyoid M
Hyoid B.

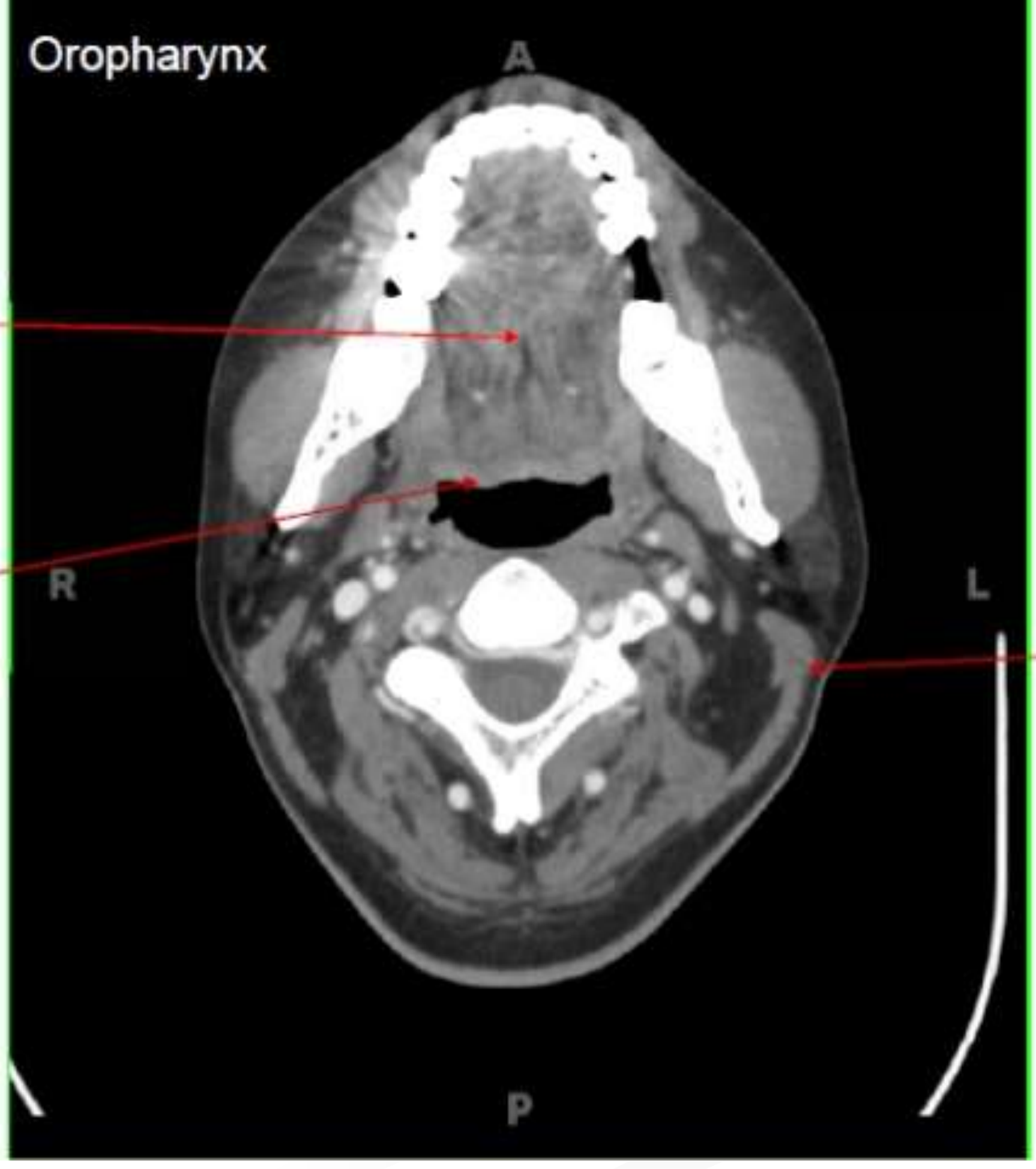

Anteroinferior
view
Hyoglossus
muscle

Oral cavity

- Tongue.
- Base of the tongue.
- Floor of the mouth(the part of the oral cavity that lies beneath the tongue)(The mylohyoid muscle and the anterior belly of the digastric muscle combined with geniohyoid muscle).


Oropharynx
A
R
L
P
Tongue
Mandibular ramus
Digastric muscle
Sternocleido Mastoid SCM
Superior Alveolar Ridge- max. bon
Palatine recess
Parotid gland
Palatine tonsils

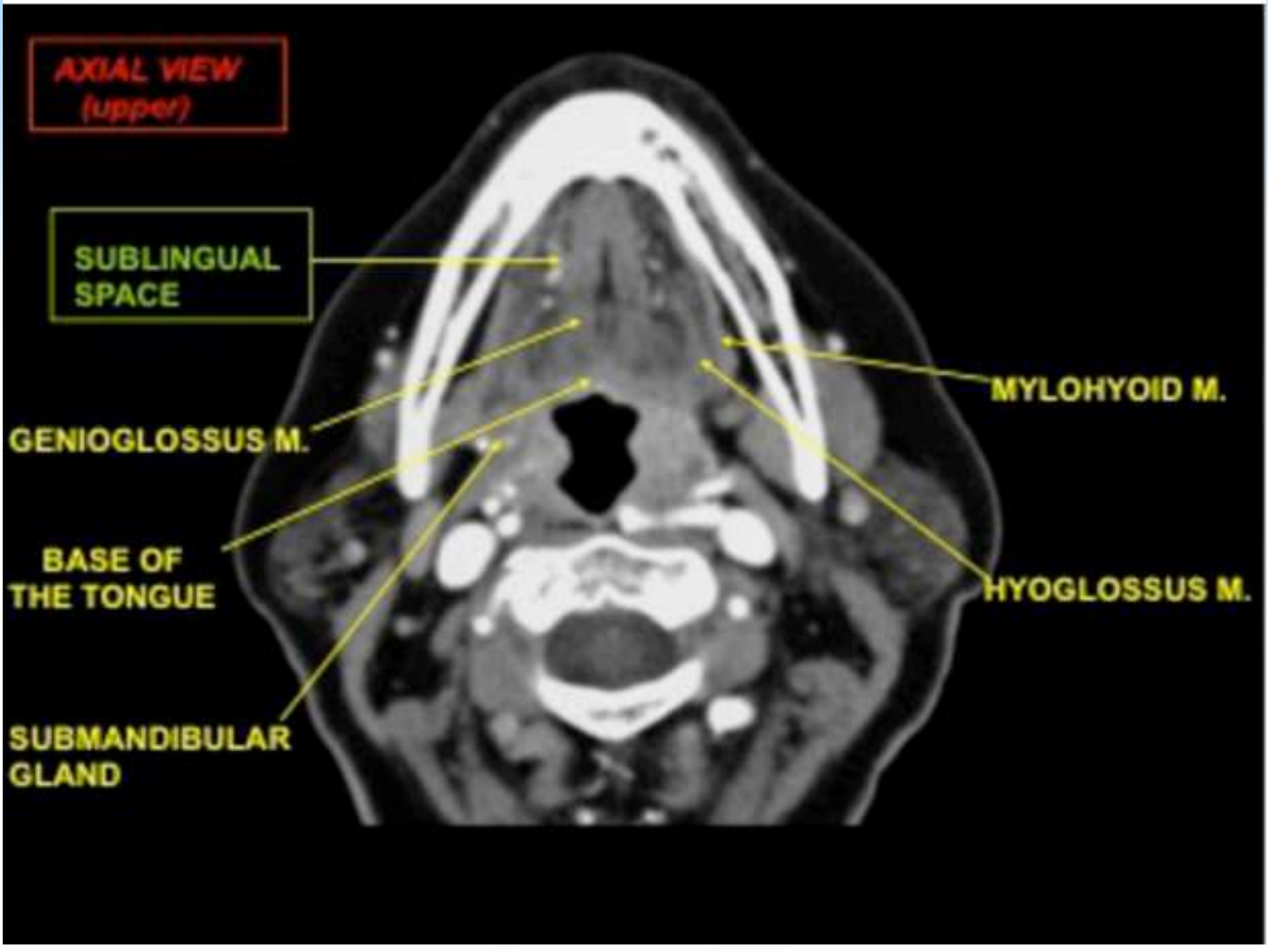
Oropharynx

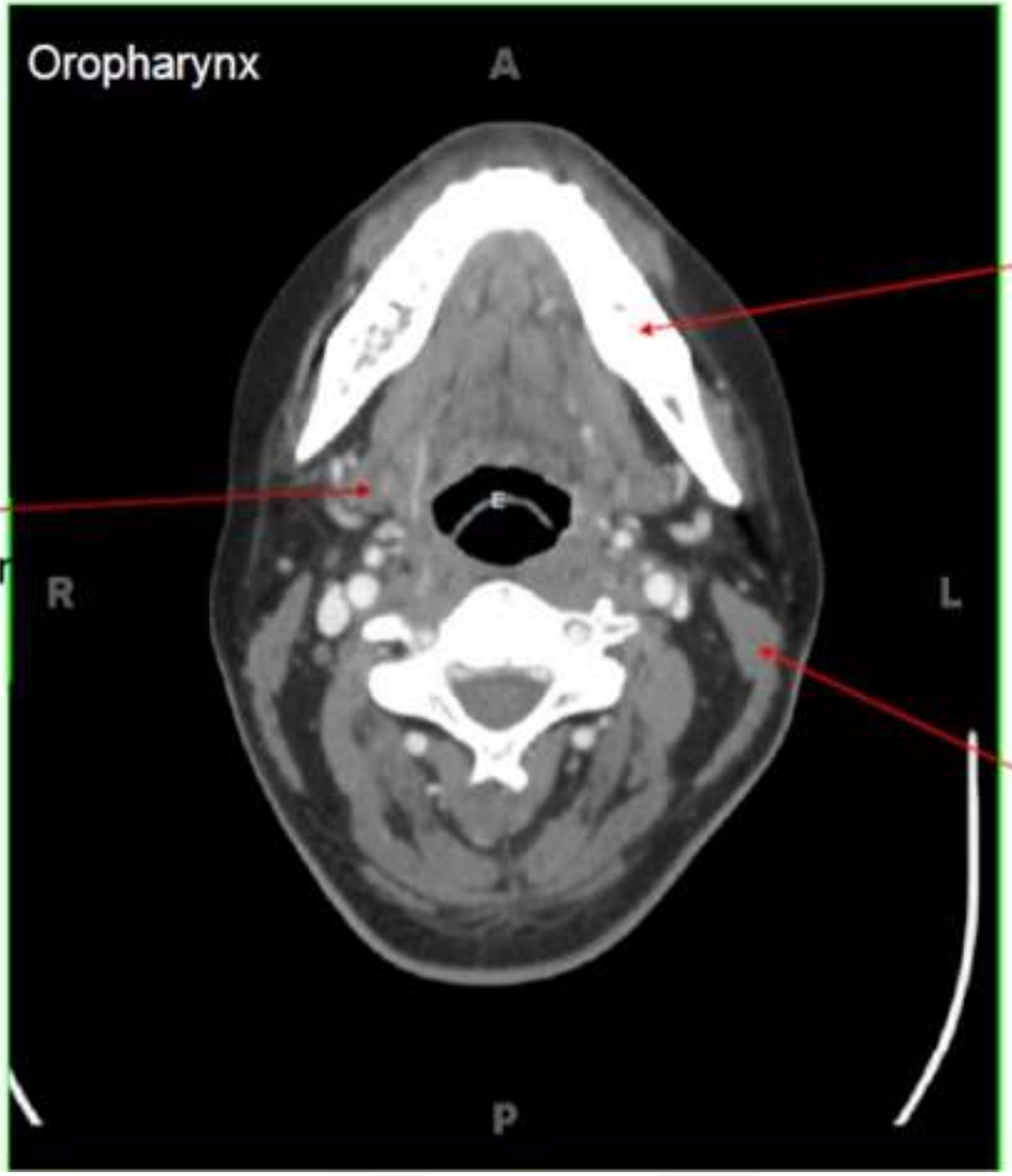


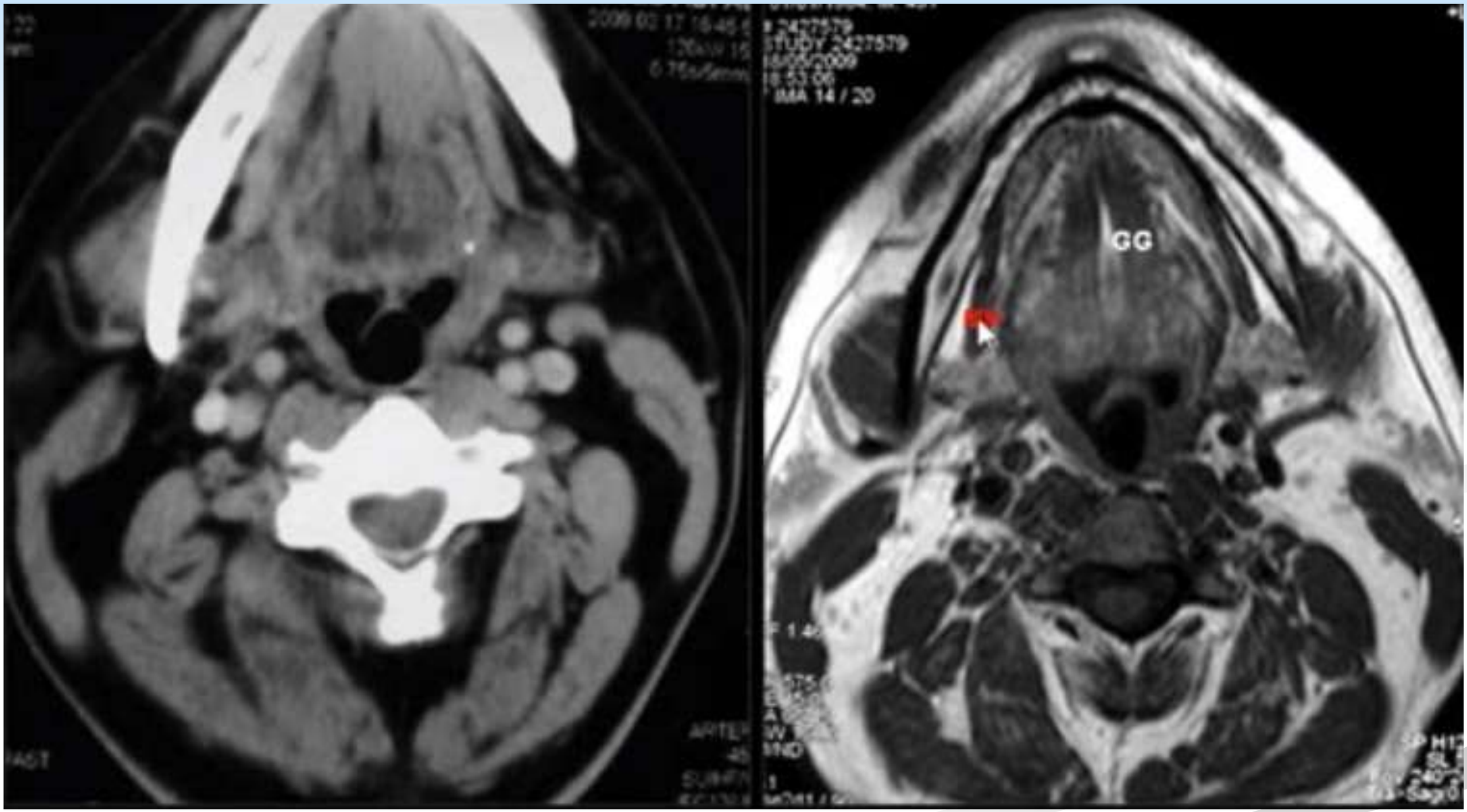
Floor of the mouth muscles

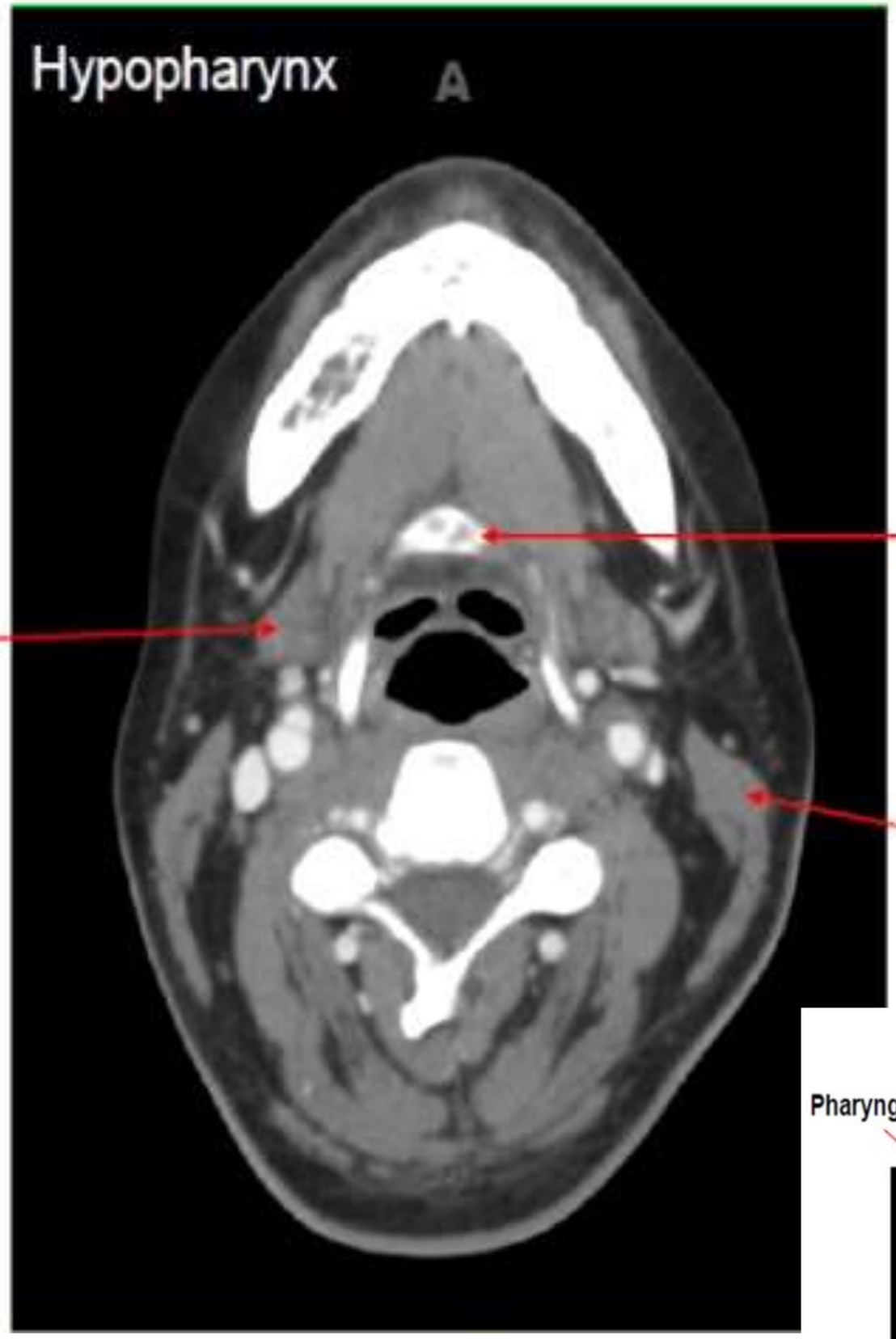
Lingual Tonsils

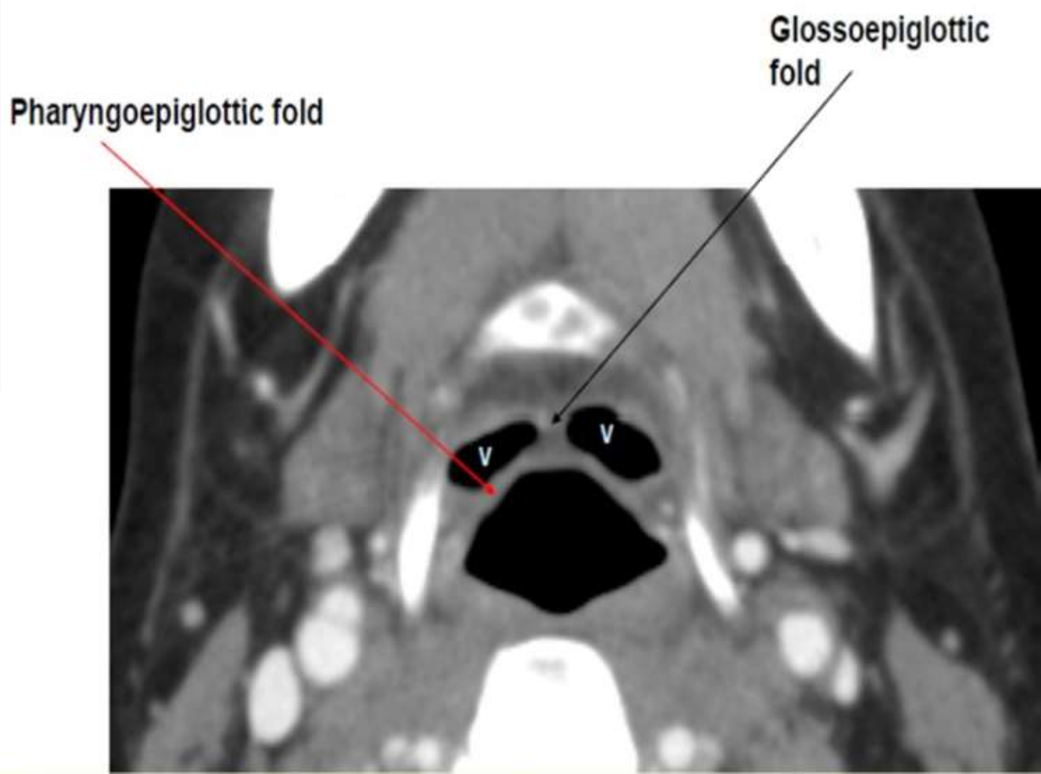
SCM


AXIAL VIEW
(upper)
SUBLINGUAL
SPACE
GENIOGLOSSUS M.
BASE OF
THE TONGUE
SUBMANDIBULAR
GLAND
MYLOHYOID M.
HYOGLOSSUS M.

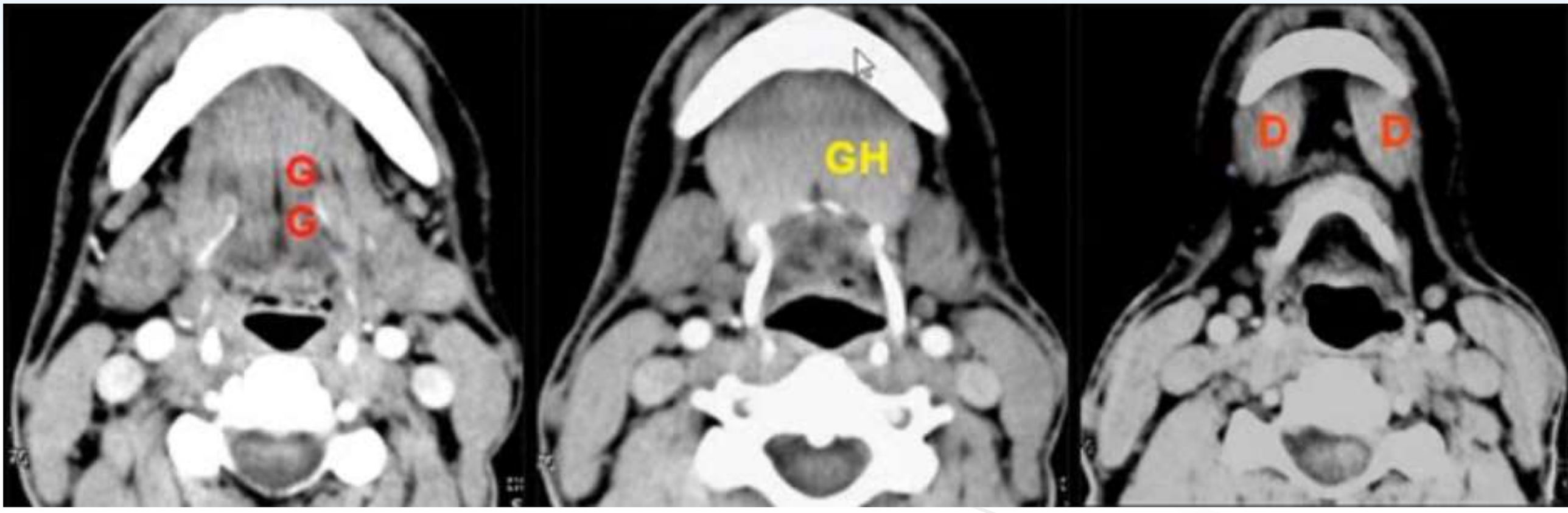

Oropharynx
A
R
L
P
Inferior Alveolar ridge-mandible
Submandibular gland
SCM

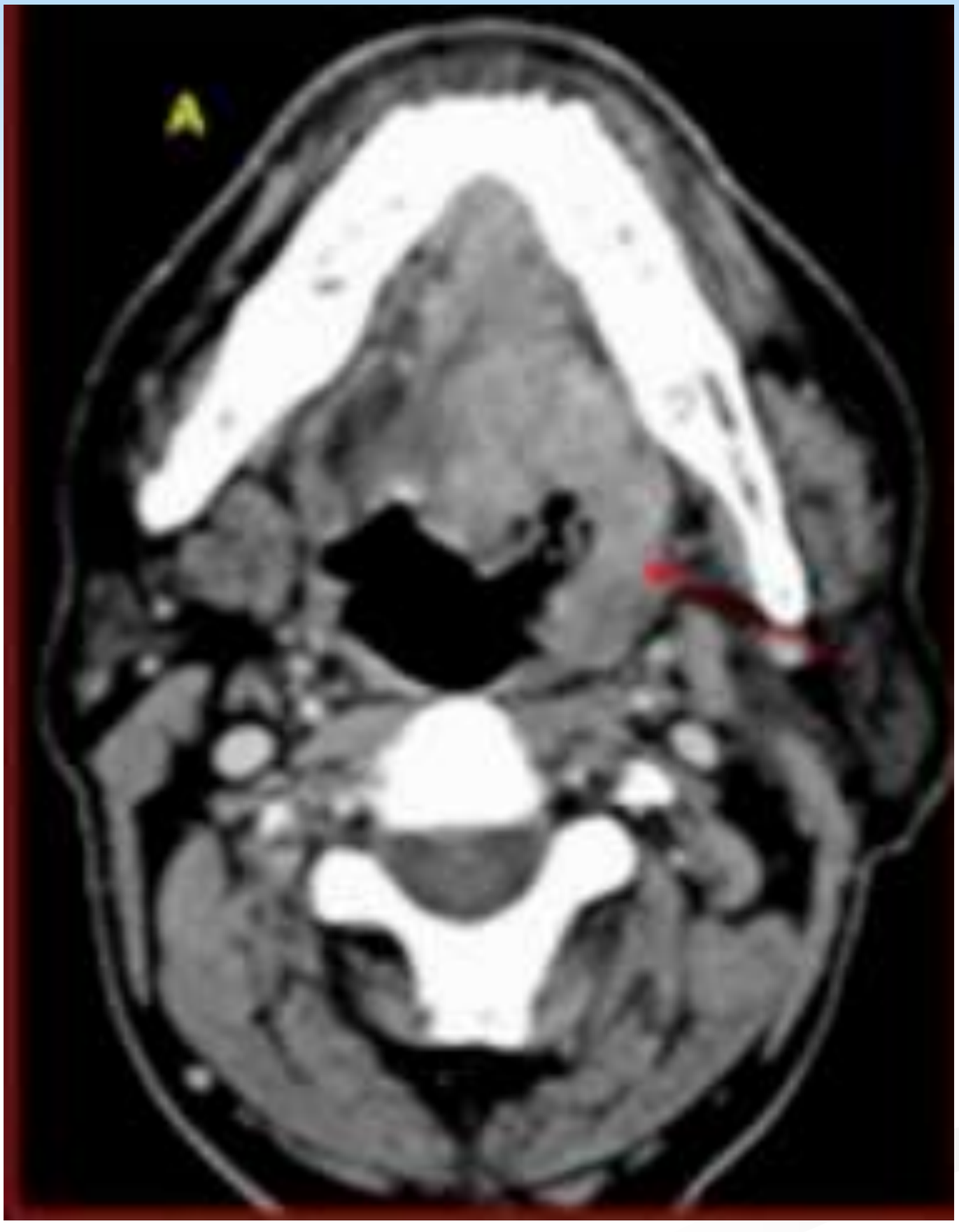

GG


Hypopharynx
A
Hyoid bone
Submandibular gland
SCM

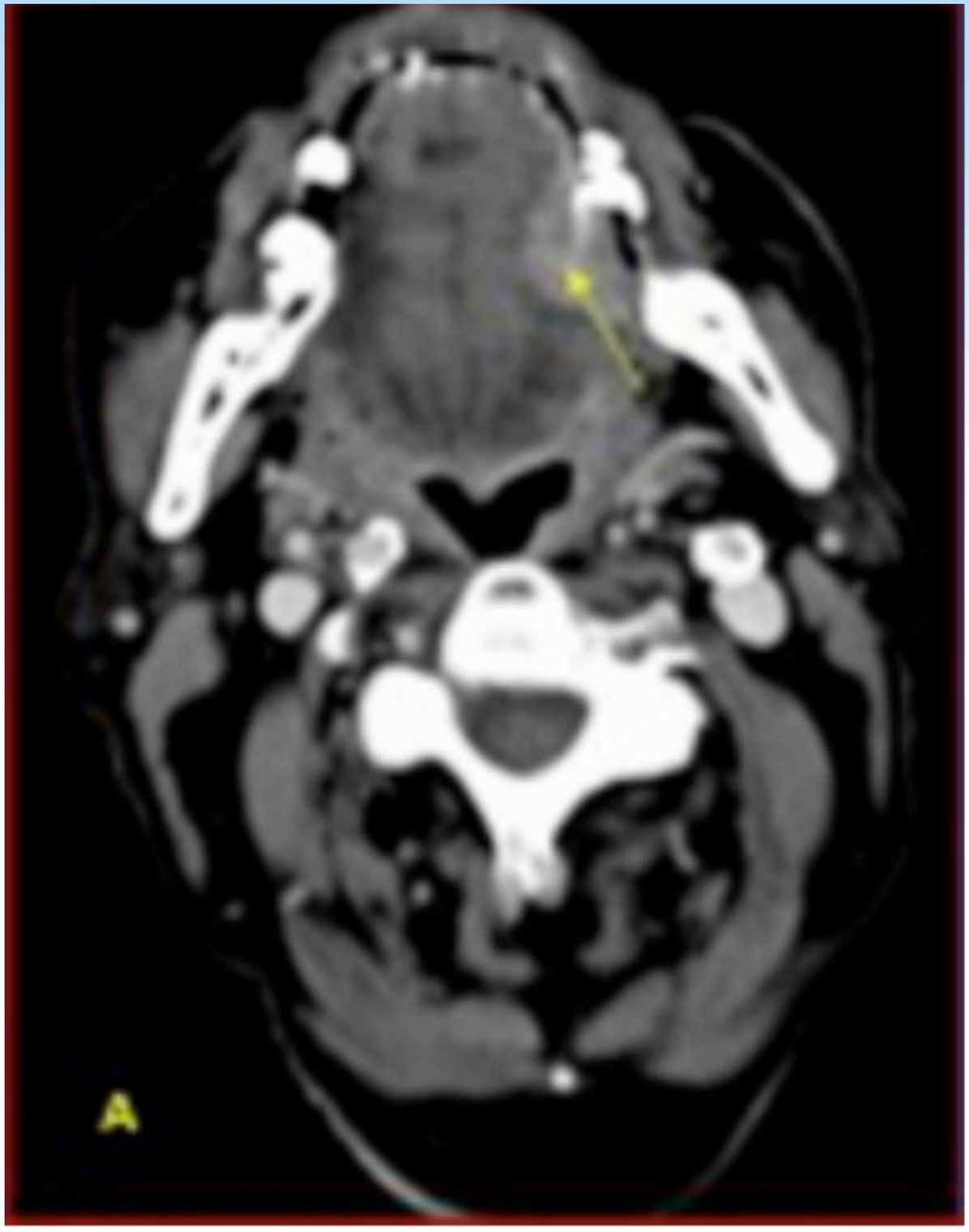

Glossoepiglottic fold
Pharyngoepiglottic fold
V
V

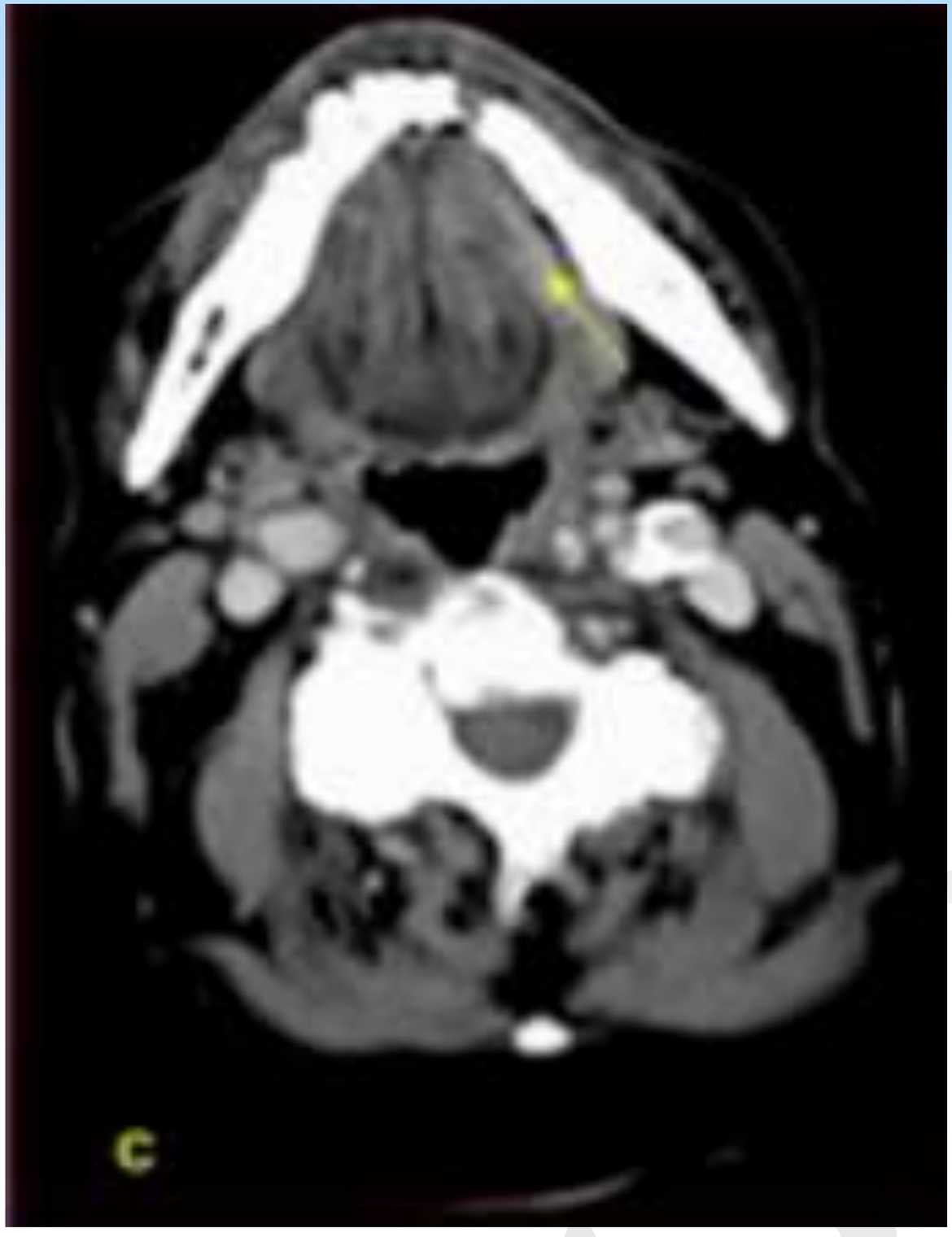
REVIEW


G
G
GH
D
D



Squamous cell CA of the floor of the mouth (mass in the Lt aspect of the floor of the mouth which extends to the tonsillar area (arrow)





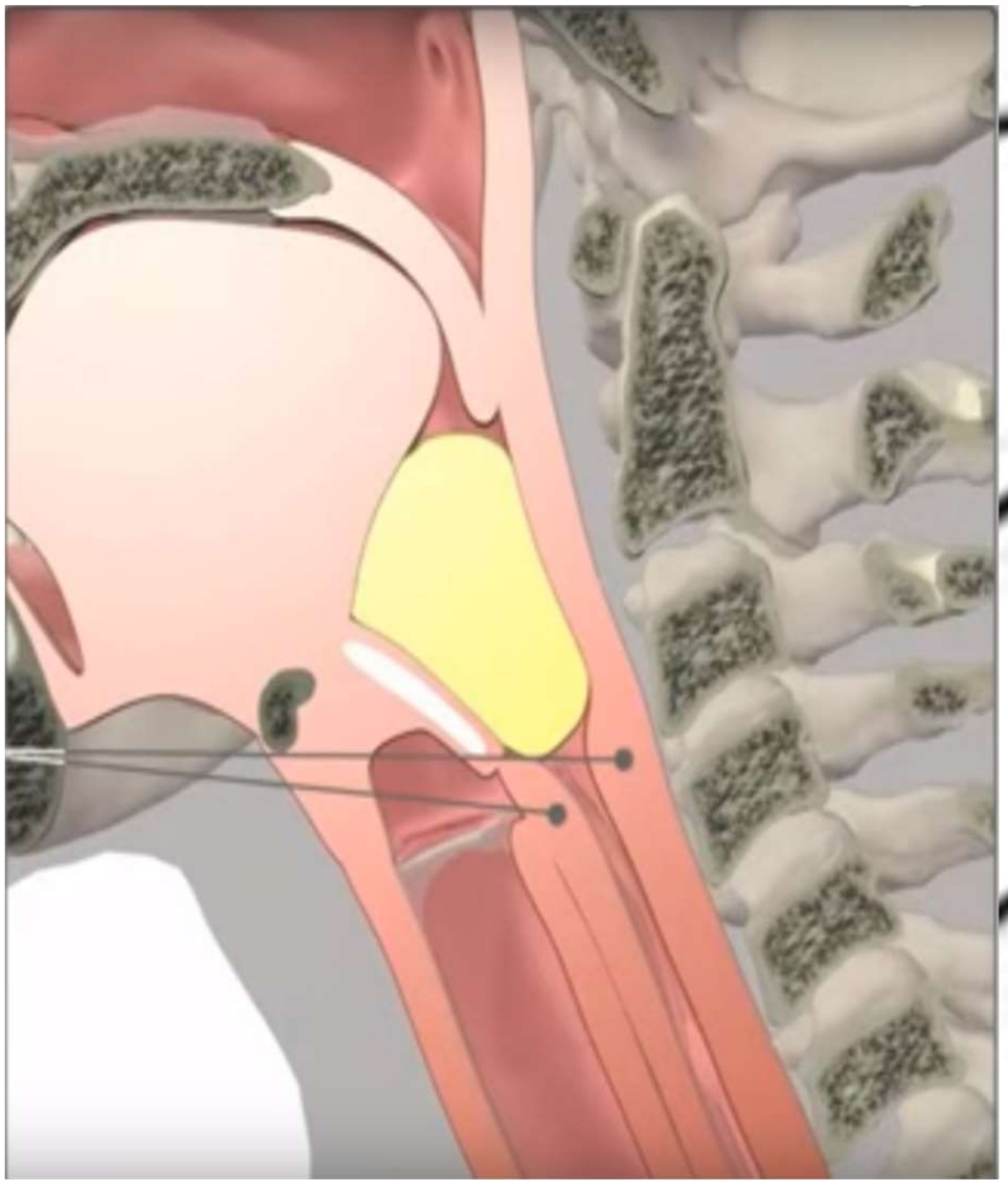
Squamous cell CA of the tongue in the LT. anterior aspect, does not cross the midline and invades the mylohyoid muscle of the floor of the mouth

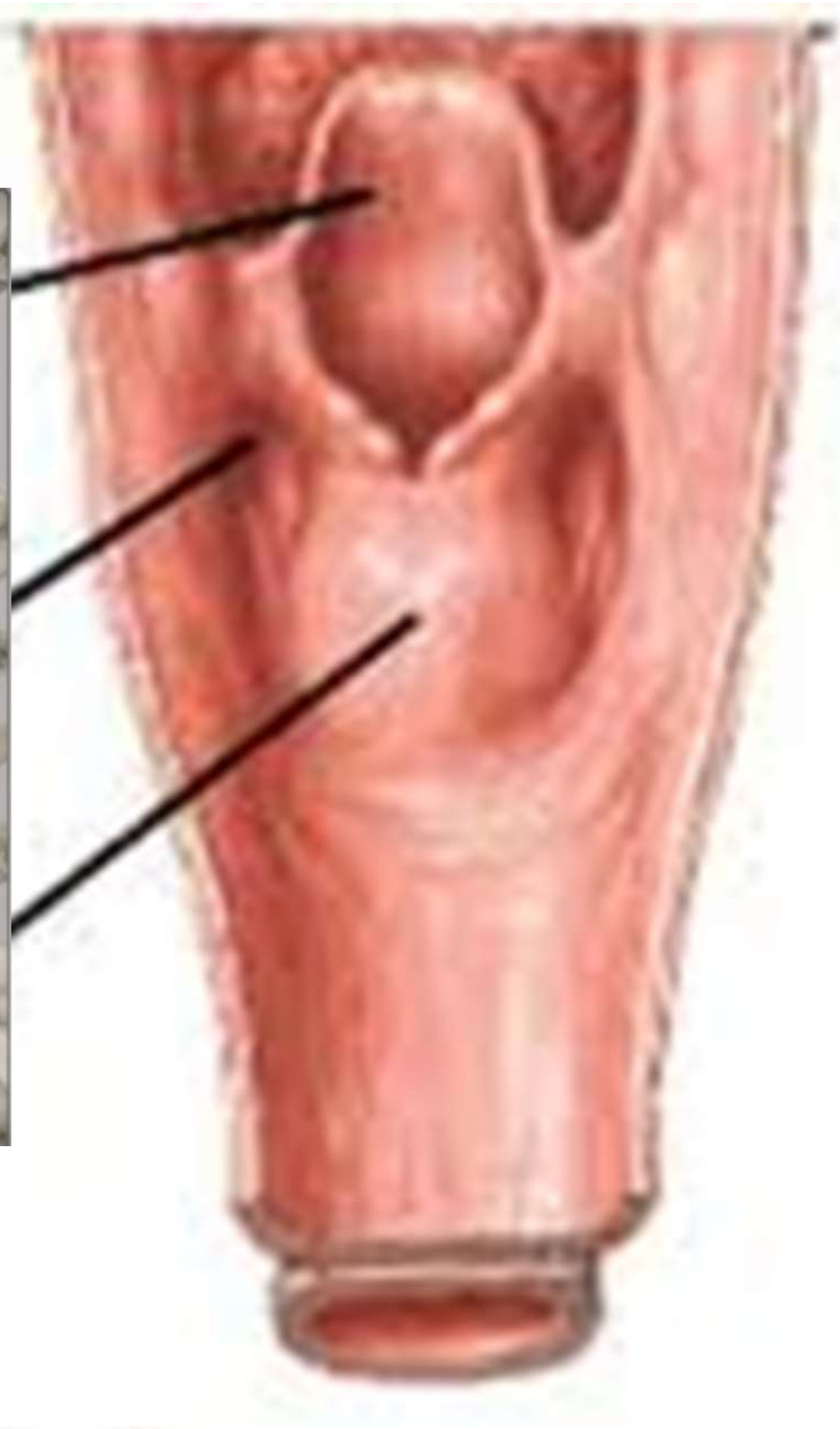
The hypopharynx(Laryngopharynx) and the Larynx

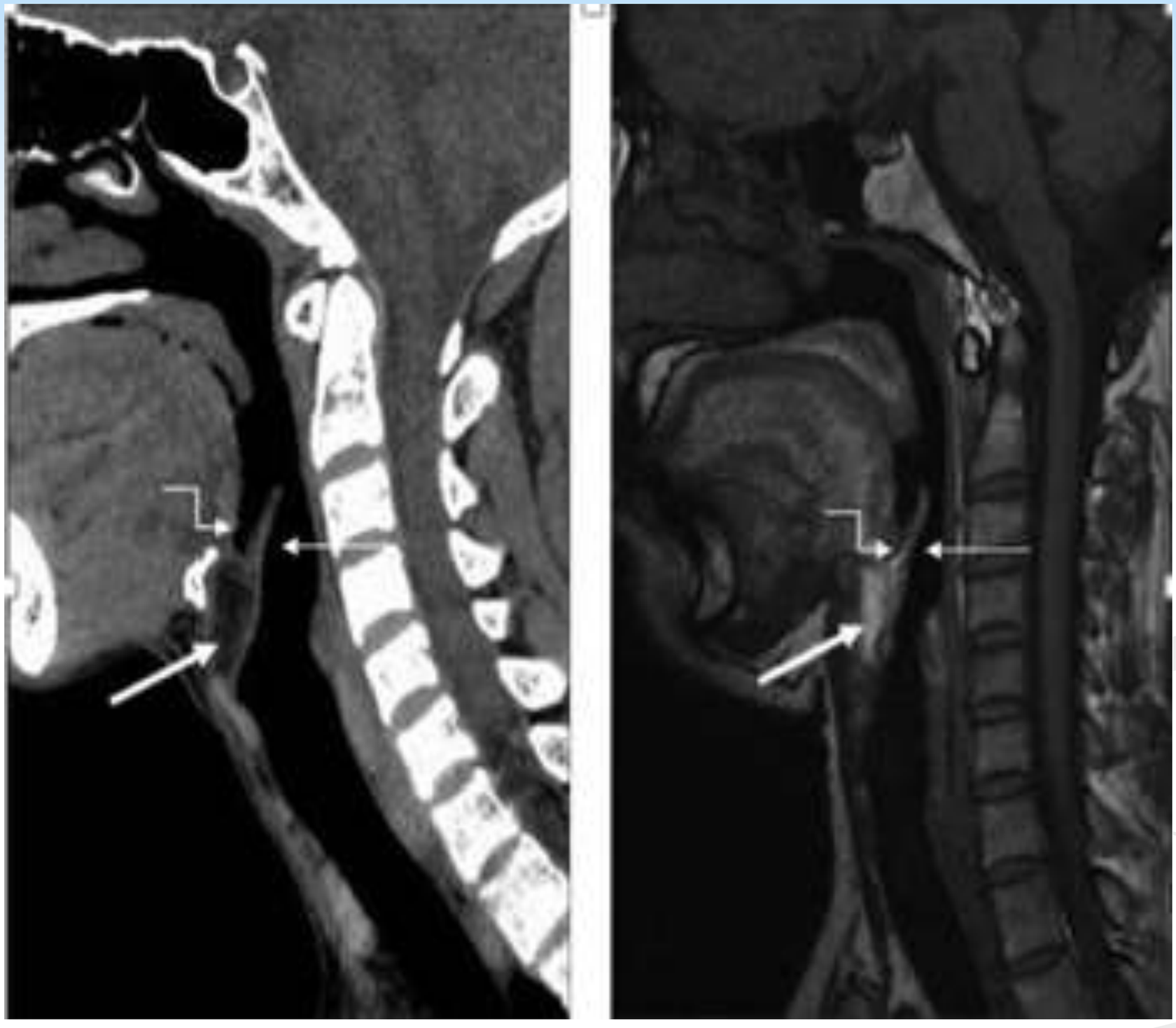
THE HYPOPHARYNX

- **Situated behind and partly on sides of the larynx.**
- **Opposite to 3rd, 4th, 5th, 6th cervical vertebrae.**
- **Clinically it is divided into 3 regions :**

- **Pyriform Sinus**(Lies on either side of larynx)
- **Post-cricoid Region** (It is a part of anterior wall of laryngopharynx ***between the upper and lower border of the cricoid lamina***).
- **Posterior Pharyngeal Wall**(It extends from level of Hyoid bone to the level of crico arytenoid joint).

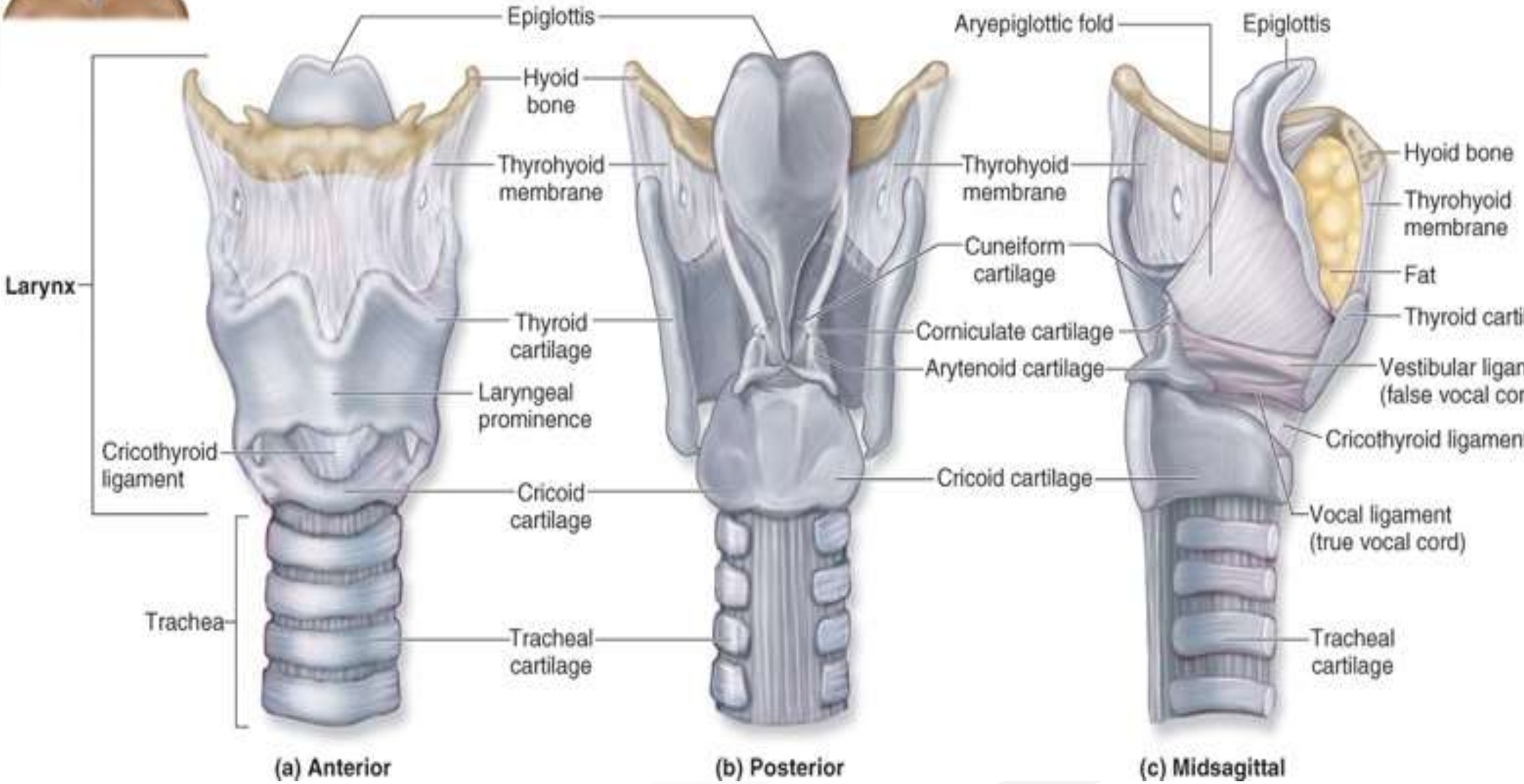




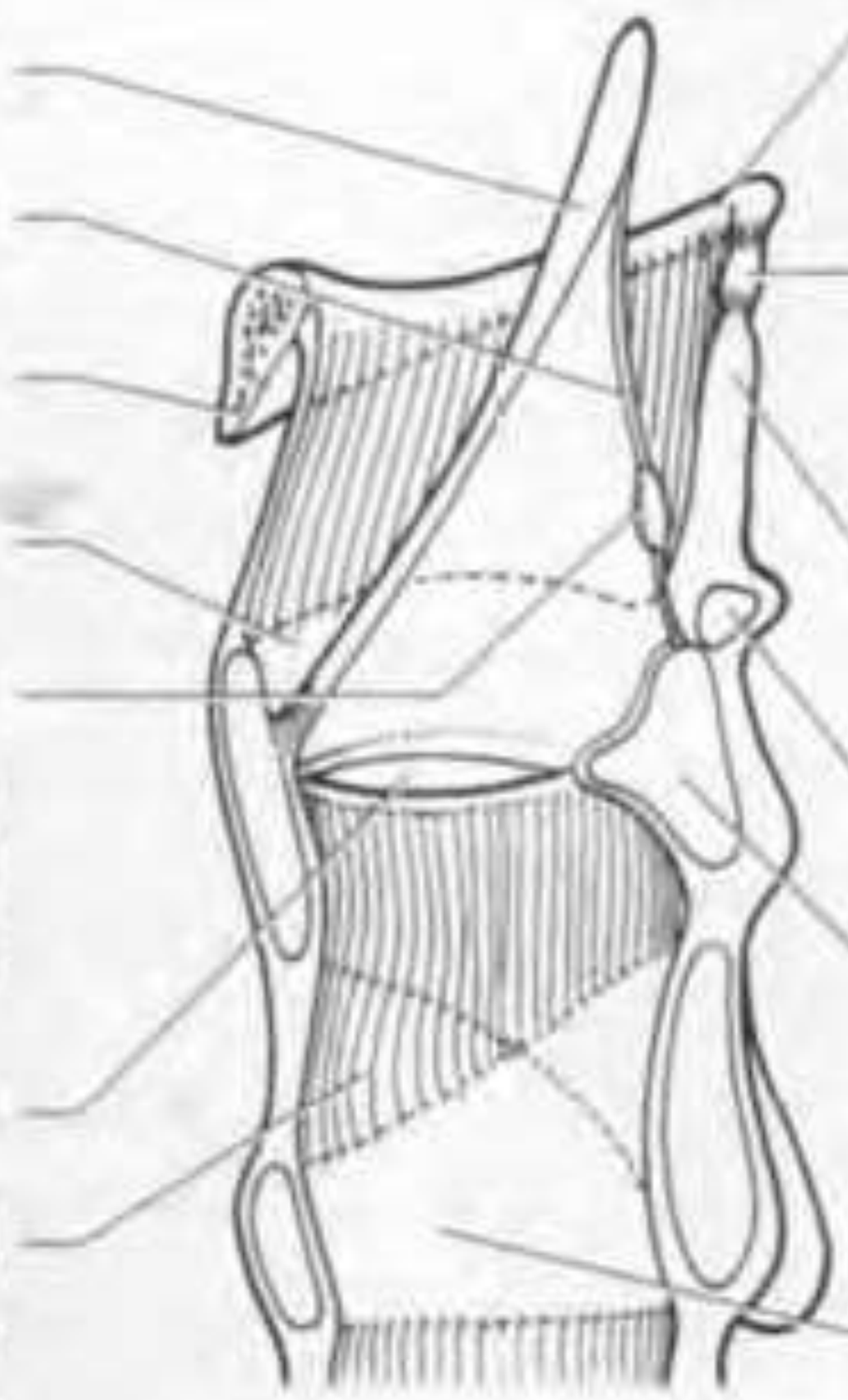


C3-epiglottis
C4-hyoid bone
C6-cricoid cartilage

THE LARYNX


Epiglottis
Hyoid bone
Thyrohyoid membrane
Larynx
Thyroid cartilage
Laryngeal prominence
Cricothyroid ligament
Cricoid cartilage
Trachea
Tracheal cartilage
(a) Anterior
Thyrohyoid membrane
Cuneiform cartilage
Corniculate cartilage
Arytenoid cartilage
Cricoid cartilage
(b) Posterior
Aryepiglottic fold
Epiglottis
Hyoid bone
Thyrohyoid membrane
Fat
Thyroid cartilage
Vestibular ligament (false vocal cord)
Cricothyroid ligament
Vocal ligament (true vocal cord)
Tracheal cartilage
(c) Midsagittal

A



Epiglottis

Aryepiglottic fold

Hyoid bone

Thyroid cartilage

Cuneiform cartilage in free edge of aryepiglottic fold

Vocal cord

Cricothyroid membrane (free upper edge forms vocal cord)

Greater cornu of hyoid bone

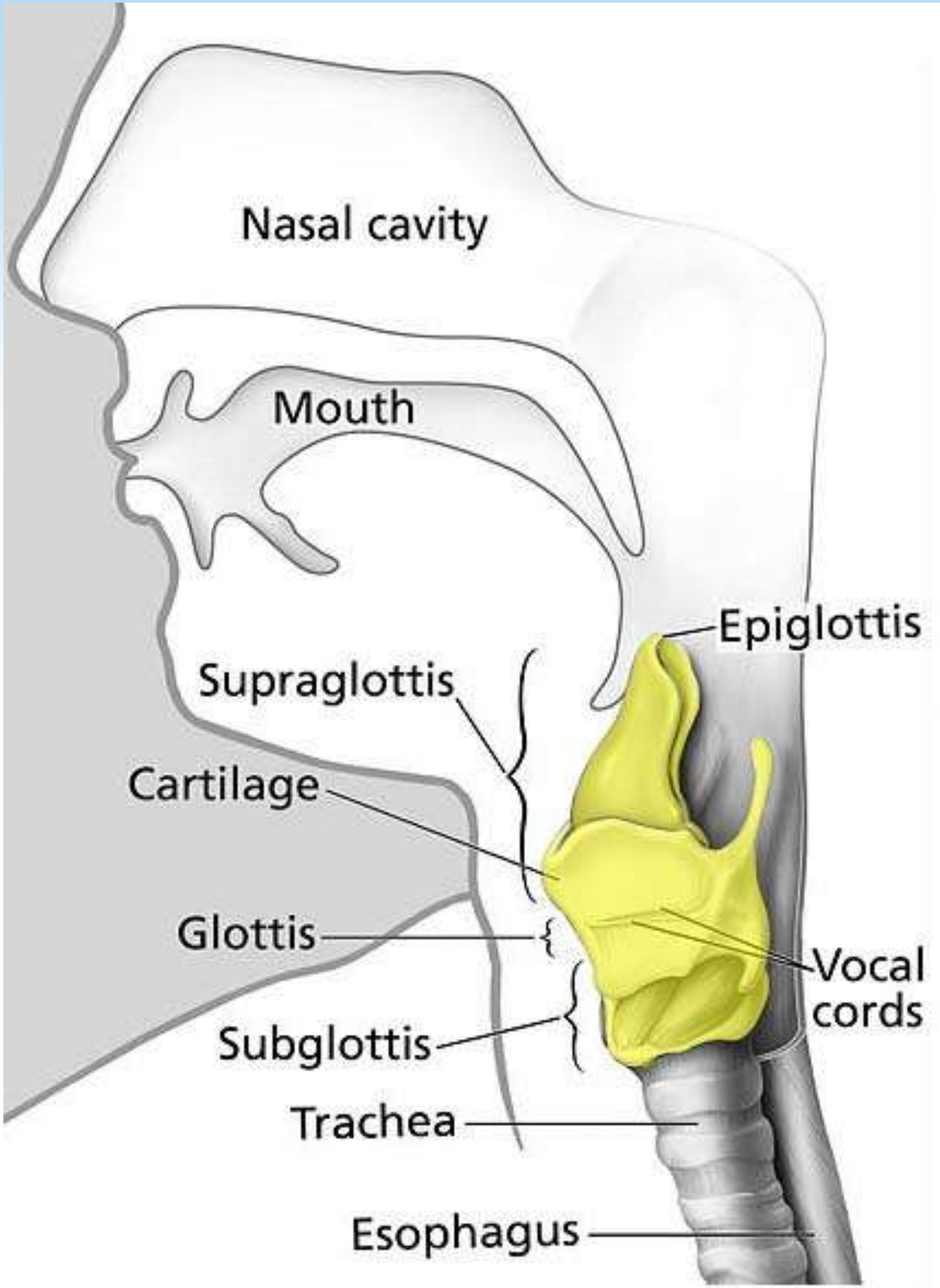
Triticeal cartilage in lateral thyrohyoid ligament

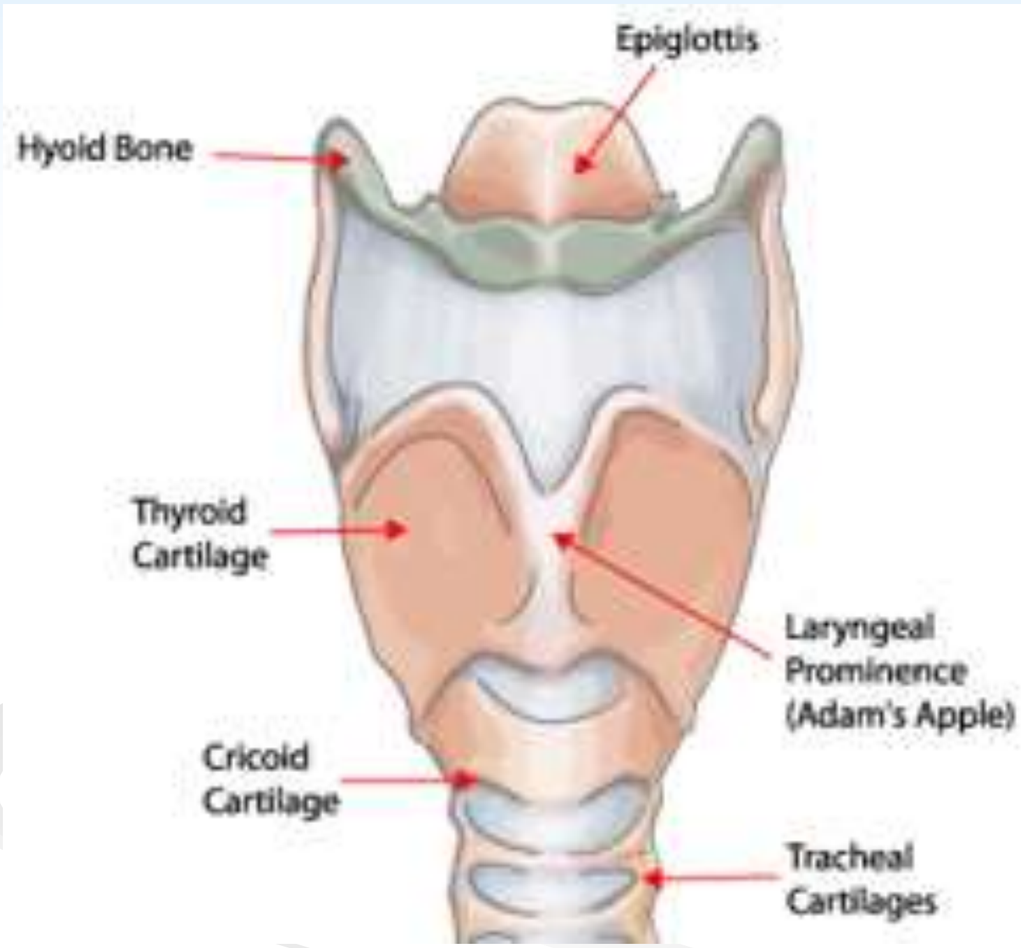
Superior cornu of thyroid cartilage

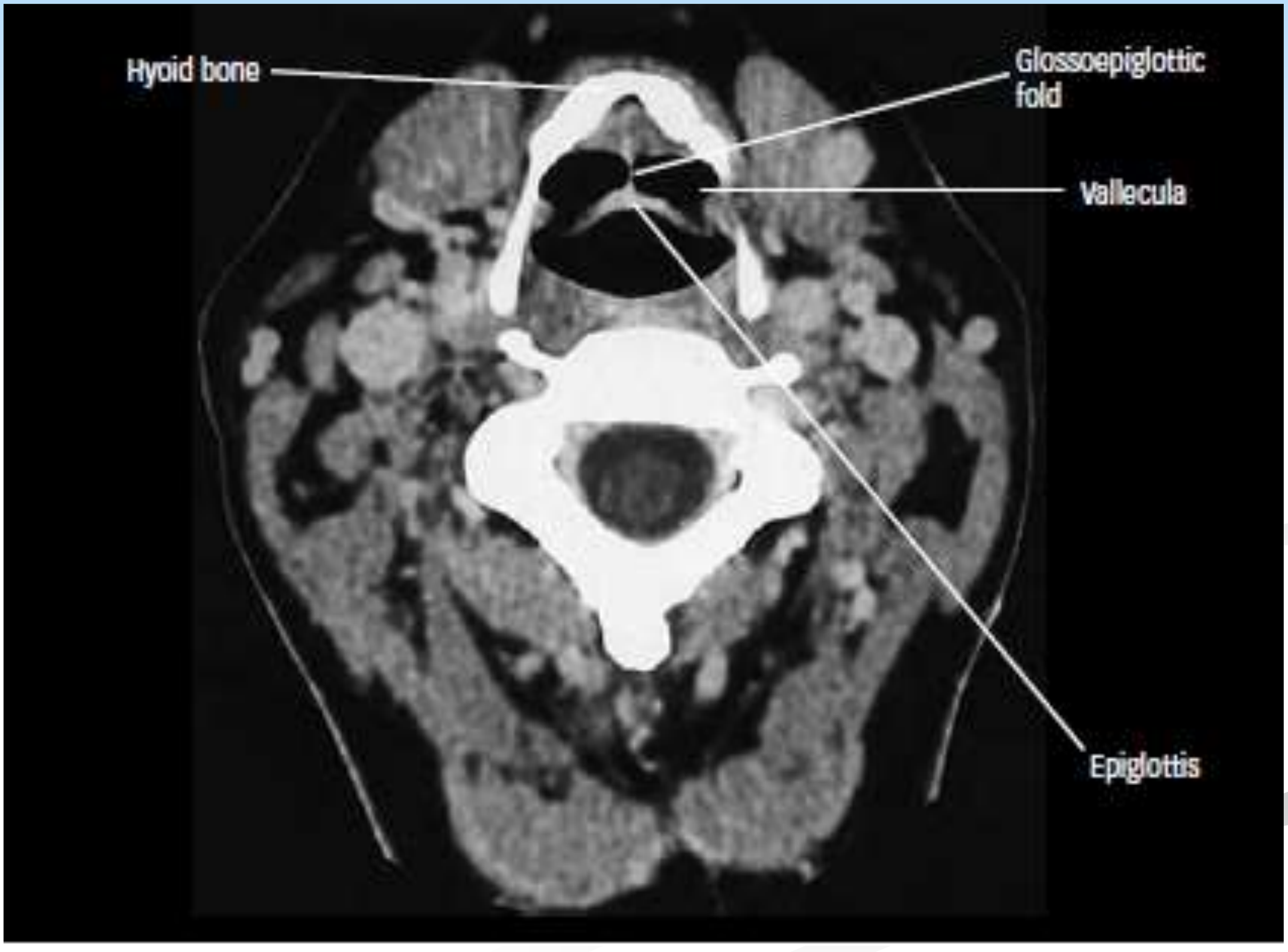
Corniculate cartilage

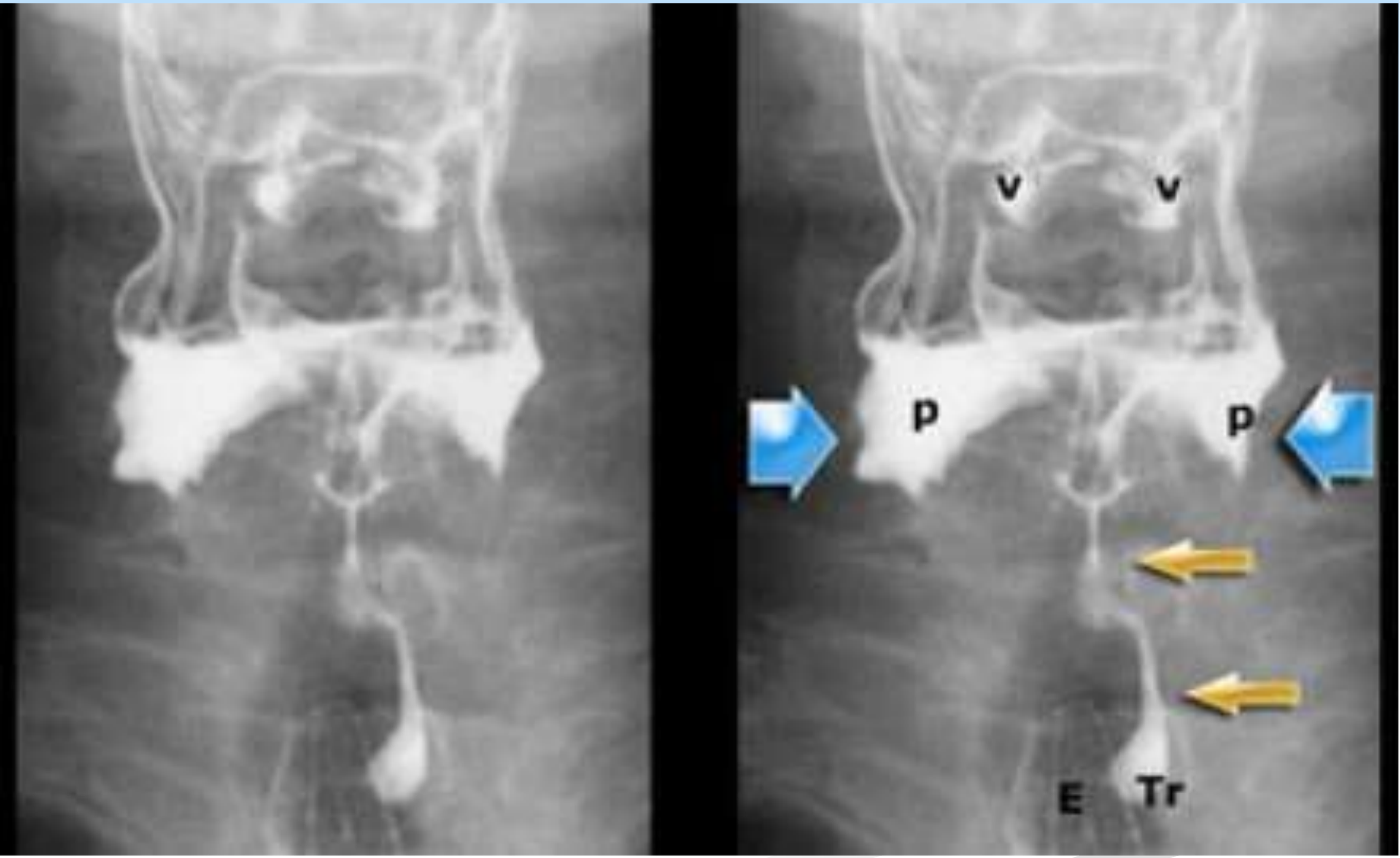
Arytenoid cartilage

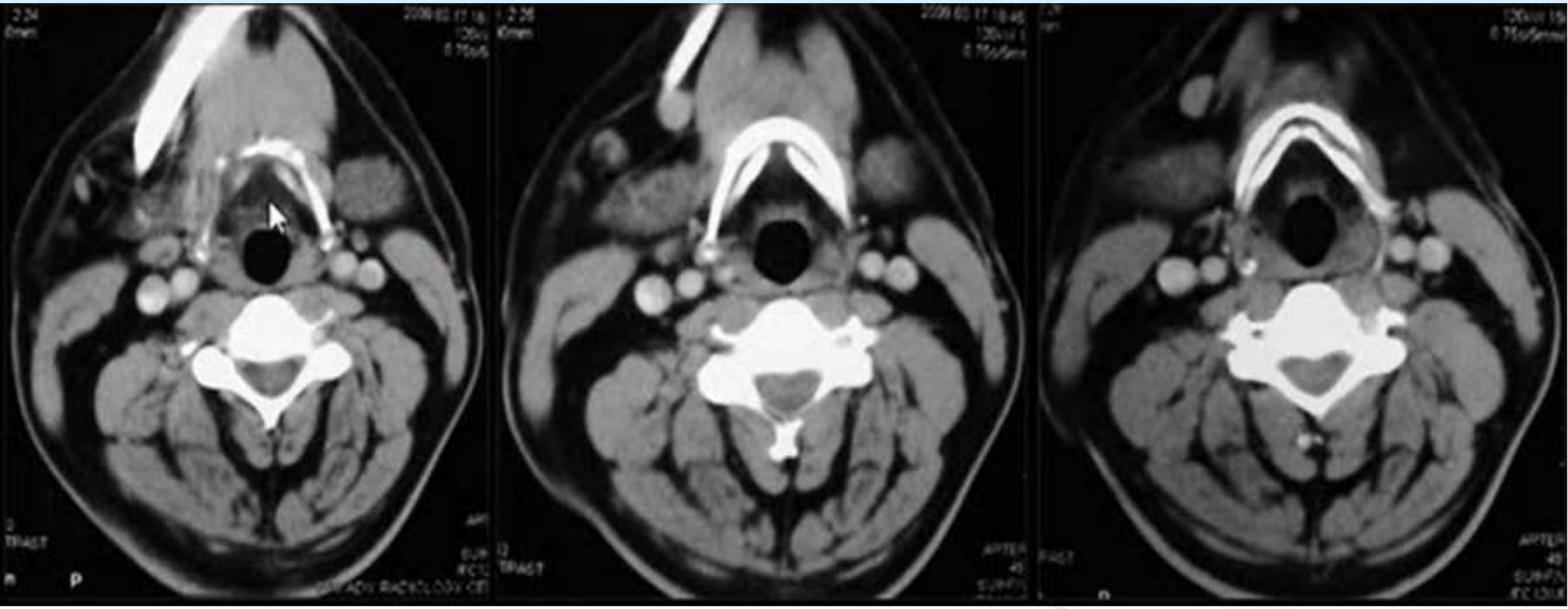
Cricoid cartilage

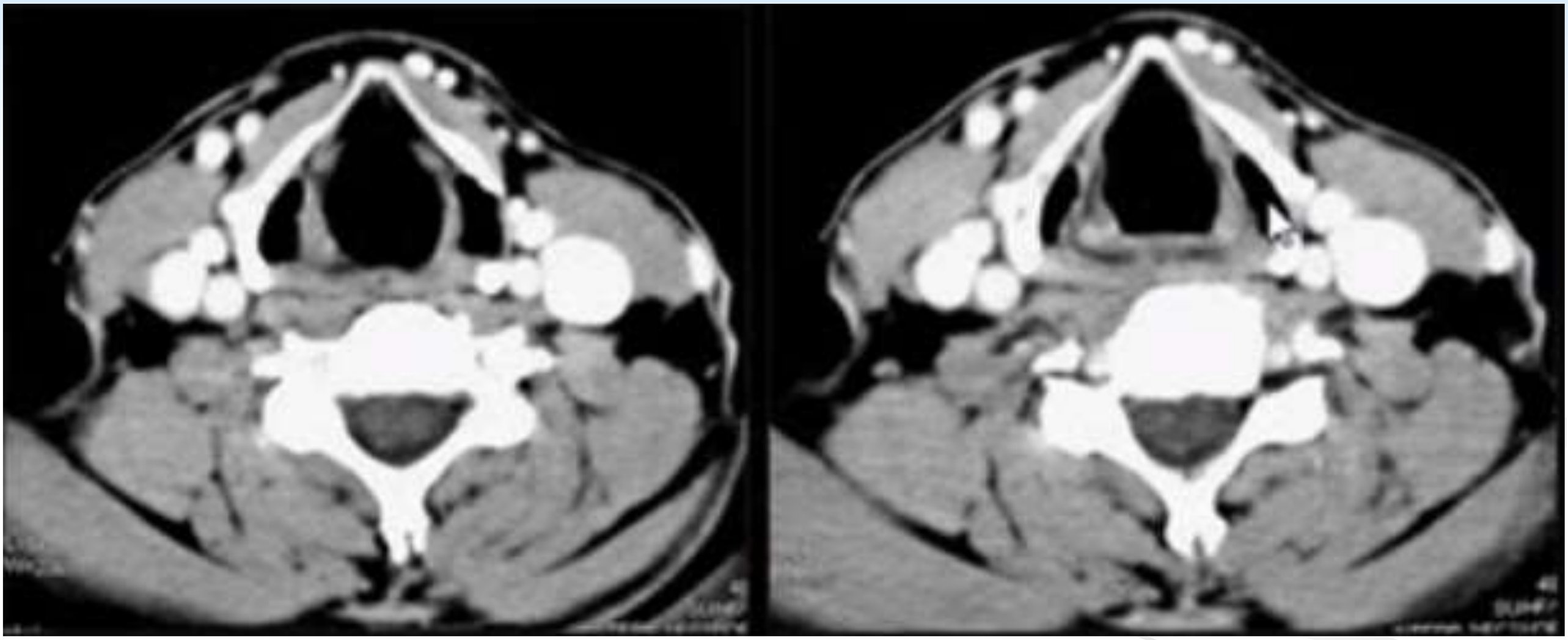

Nasal cavity
Mouth
Epiglottis
Supraglottis
Cartilage
Glottis
Vocal cords
Subglottis
Trachea
Esophagus


Epiglottis
Hyoid Bone
Thyroid Cartilage
Laryngeal Prominence (Adam's Apple)
Cricoid Cartilage
Tracheal Cartilages


Hyoid bone
Glossoepiglottic fold
Vallecula
Epiglottis


V
V
P
P
E
Tr



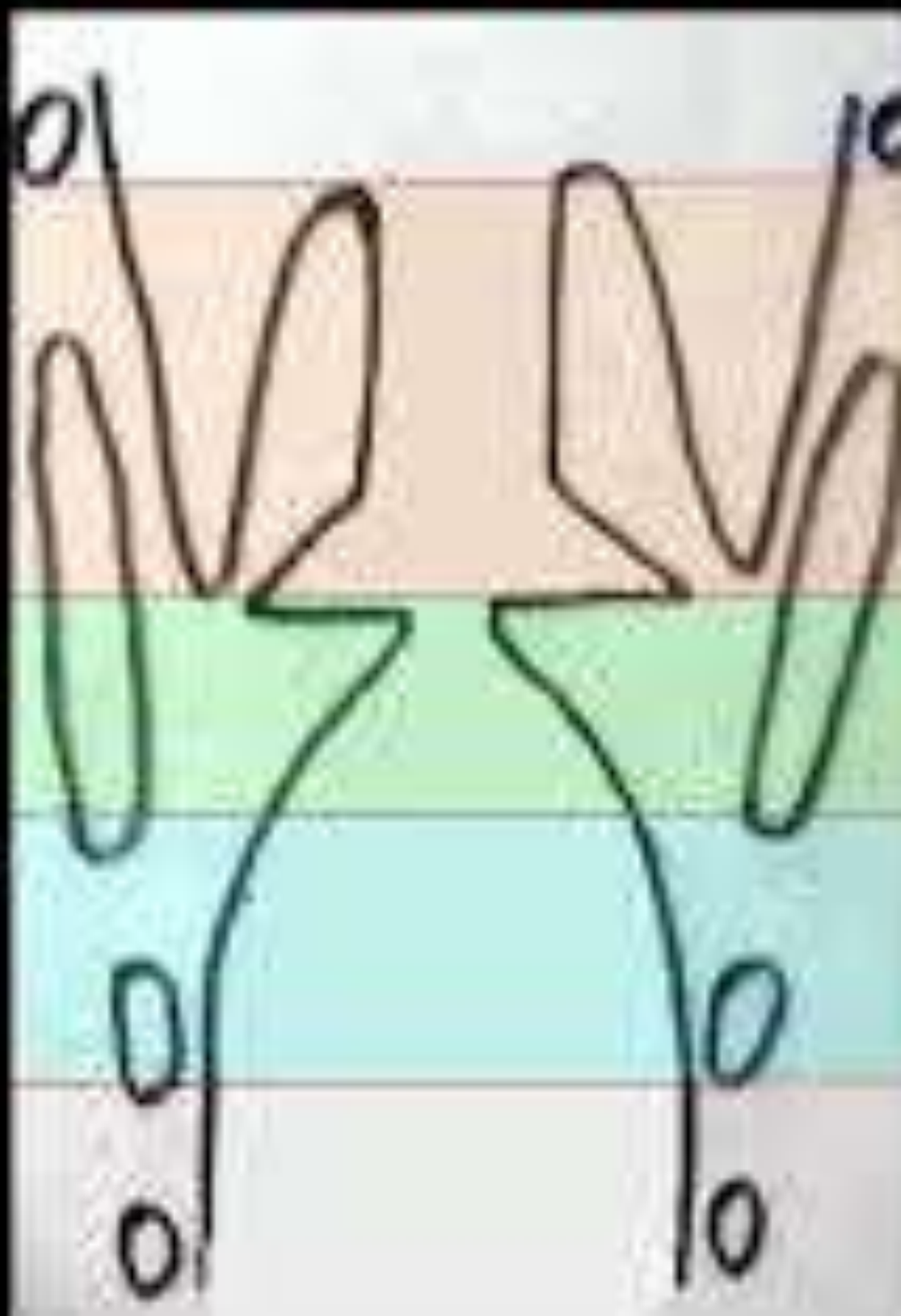


Oncological Divisions

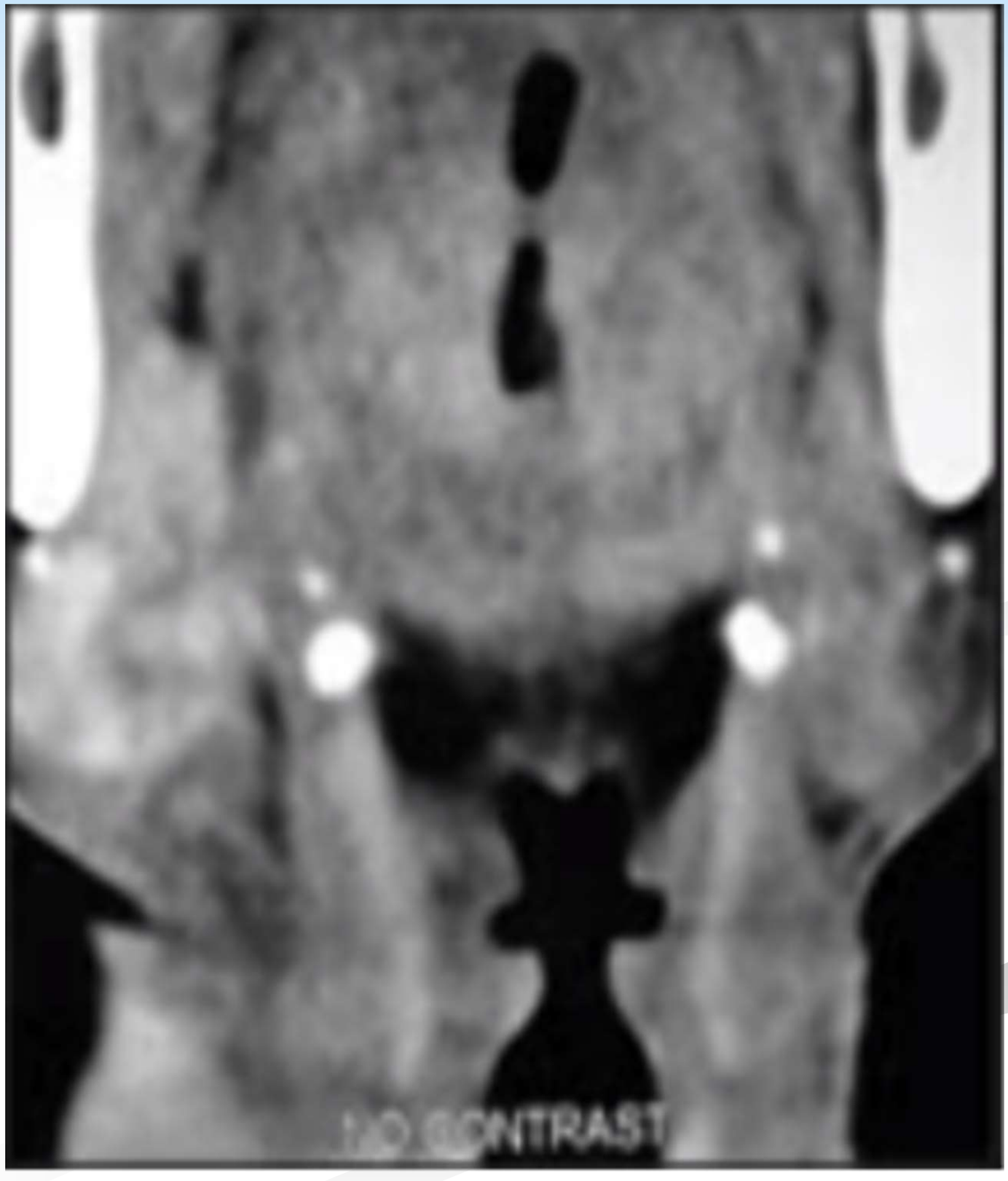
A. **Supraglottis:** laryngeal inlet to apex of ventricle

B. **Glottis:** apex of ventricle to 10 mm below

C. **Subglottis:** lower glottic border to lower cricoid border



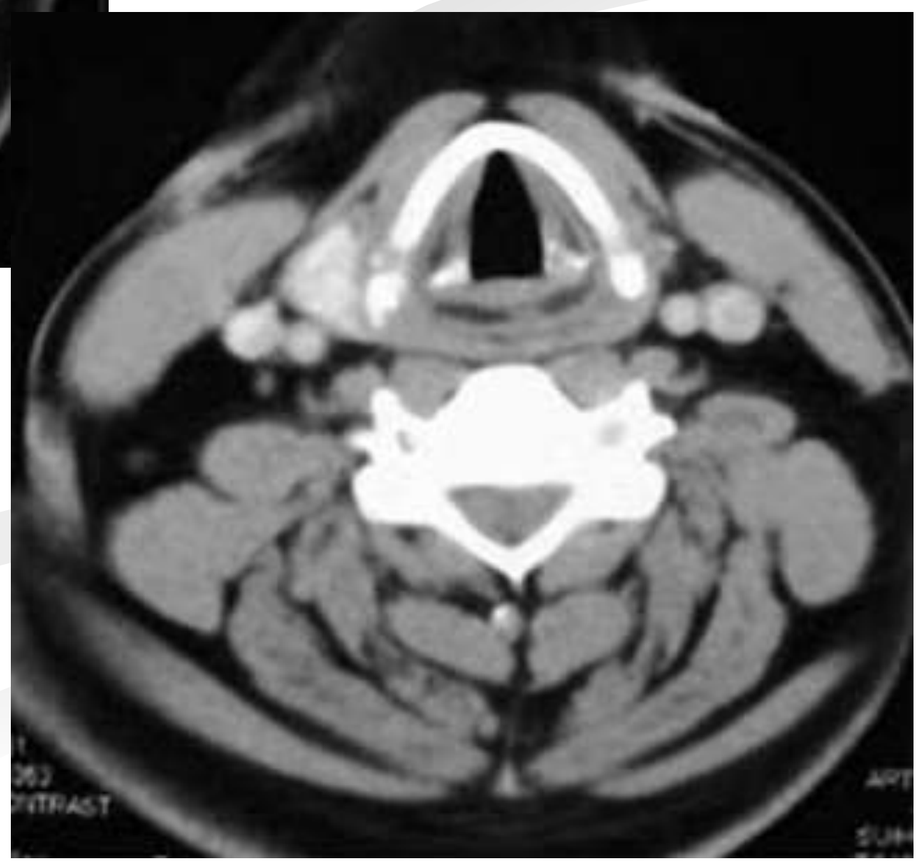

4 2 CMS

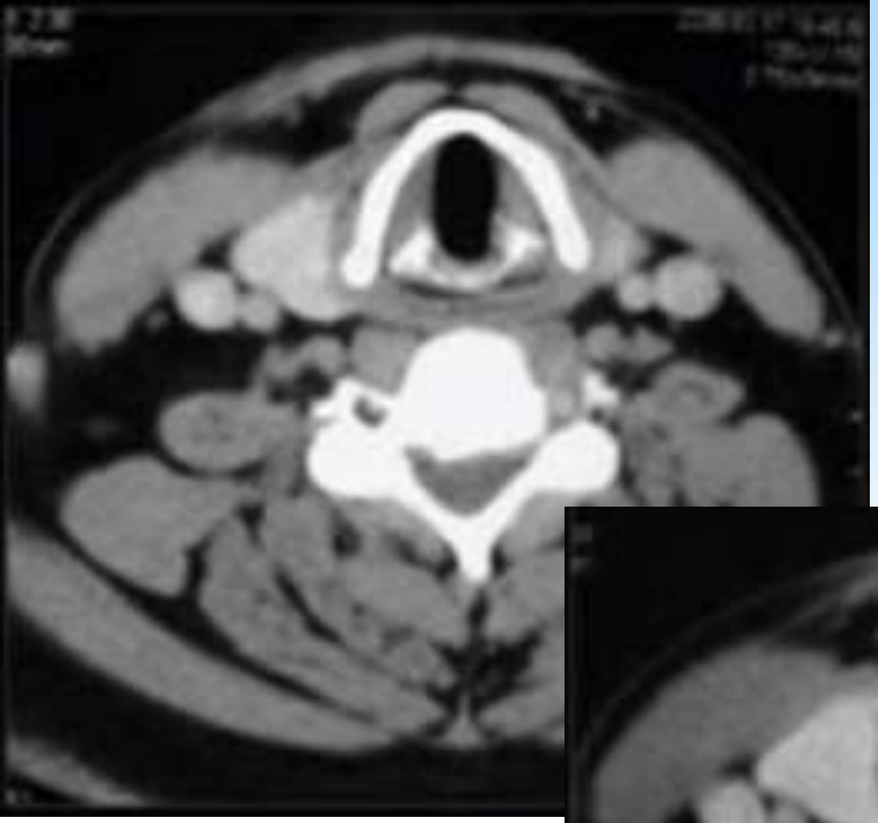

I/O CONTRAST

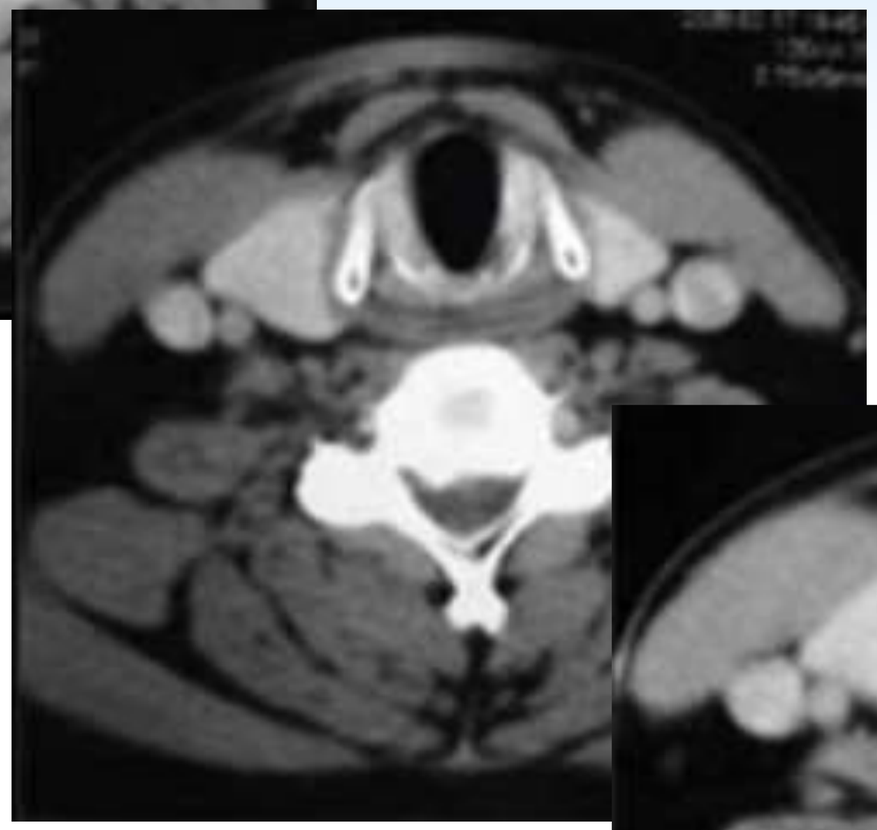
- The false cord are thick folds of mucous membranes parallel to the true vocal cords and filled with fat.
- The true cords are fibrous and divides the larynx into supra and infra glottis regions.
- The space between the true and false cords is called the laryngeal ventricle.

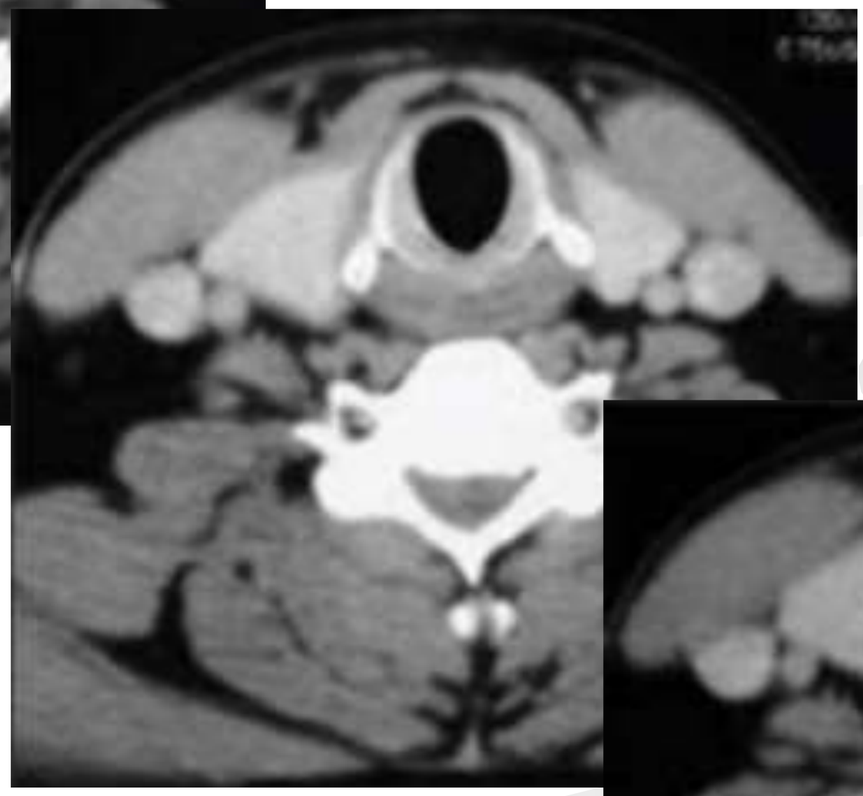
False vocal cord

True vocal cord









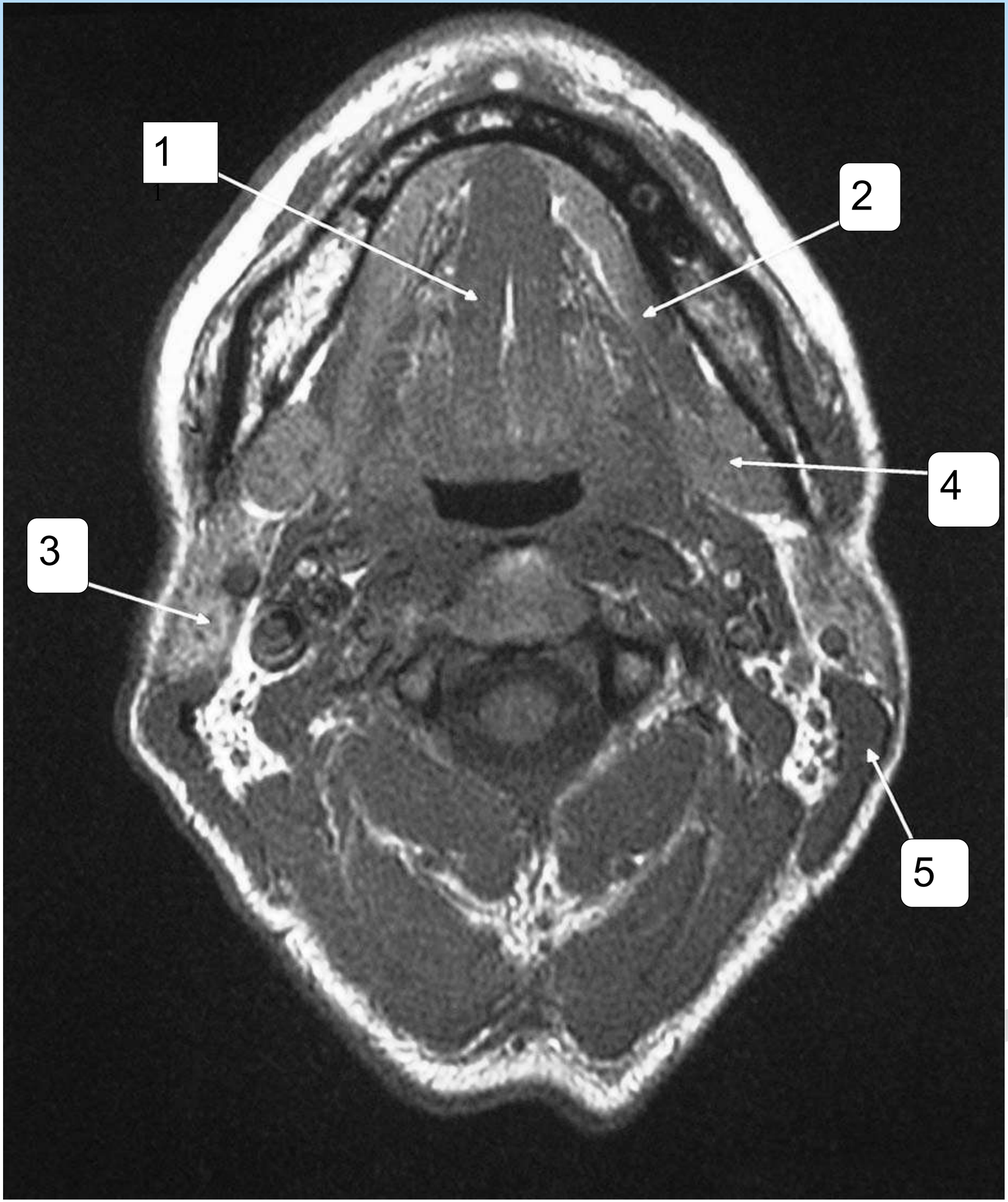
LARYNGEAL CA (SUPRA GLOTTIC)

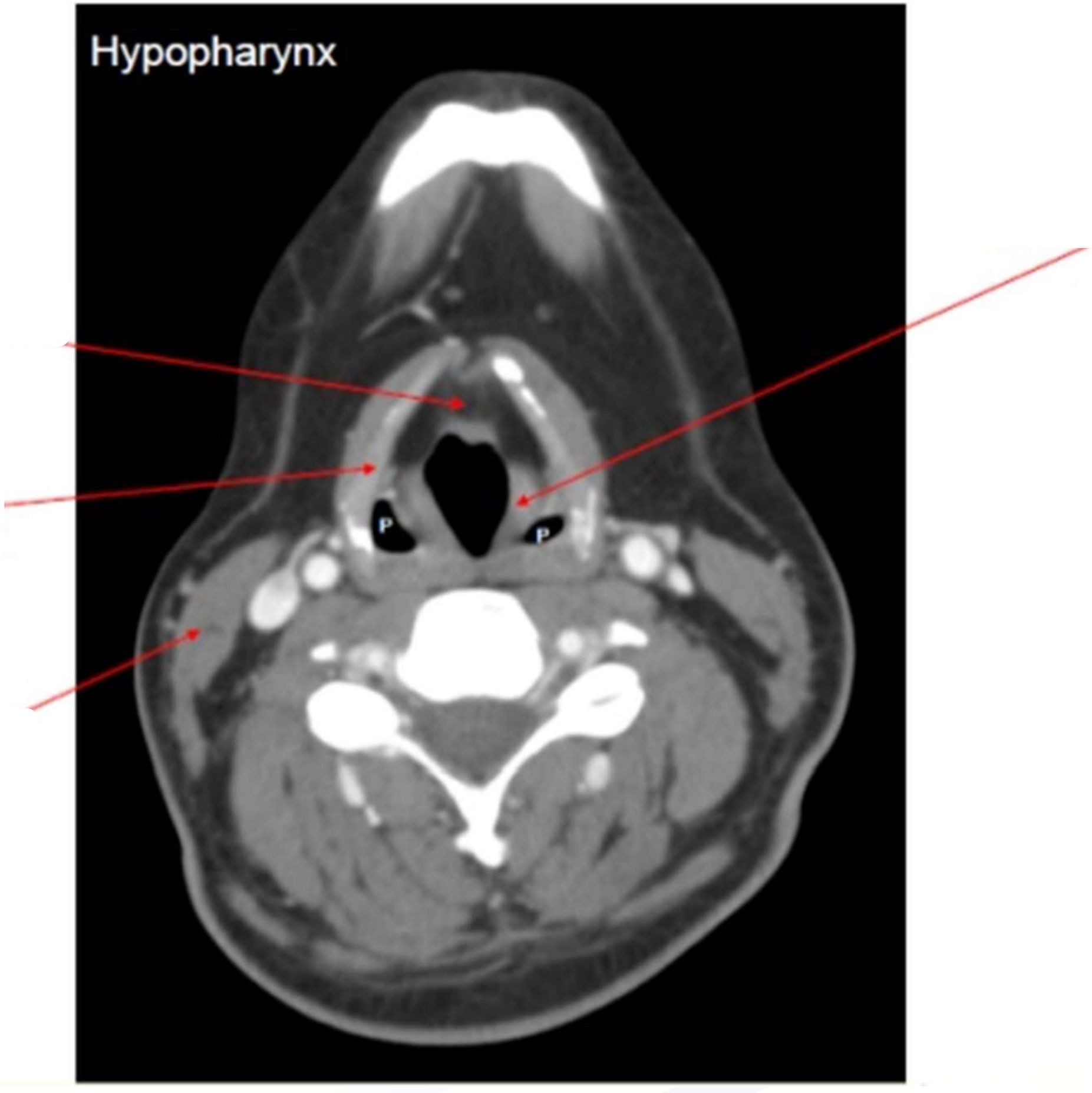
Thickening and enhancement of the epiglottis with infiltration of the pre epiglottic space . Downward tumor extension into the aryepiglottic fold with infiltration of the LT false vocal cord.

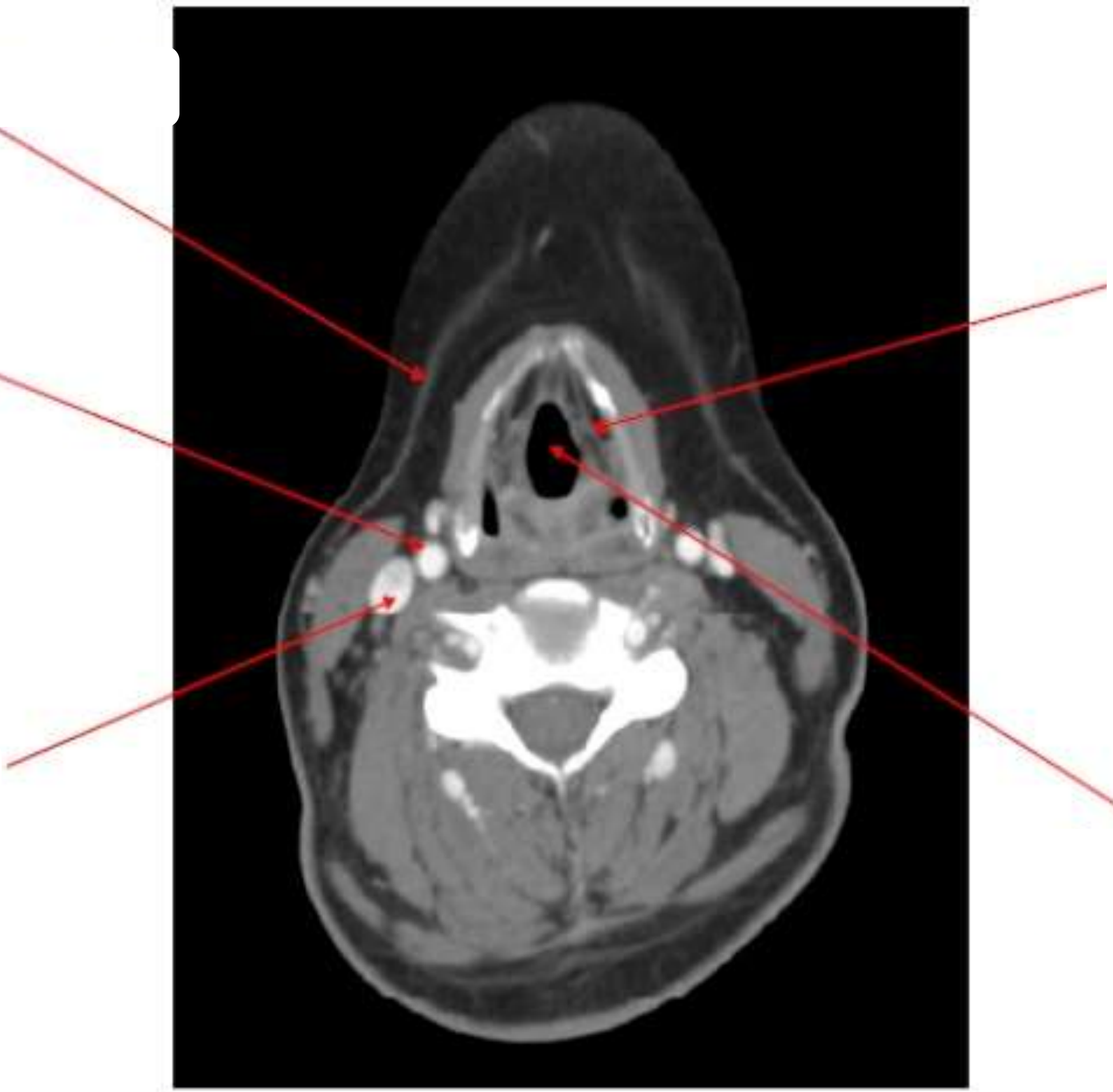
Sclerosis of the LT. thyroid cartilage indicates its invasion.

Glottic CA with anterior commissure invasion .
The anterior commissure should be less than 1-2 mm thickness This lesion extends across the midline to the contralateral LT vocal cord .

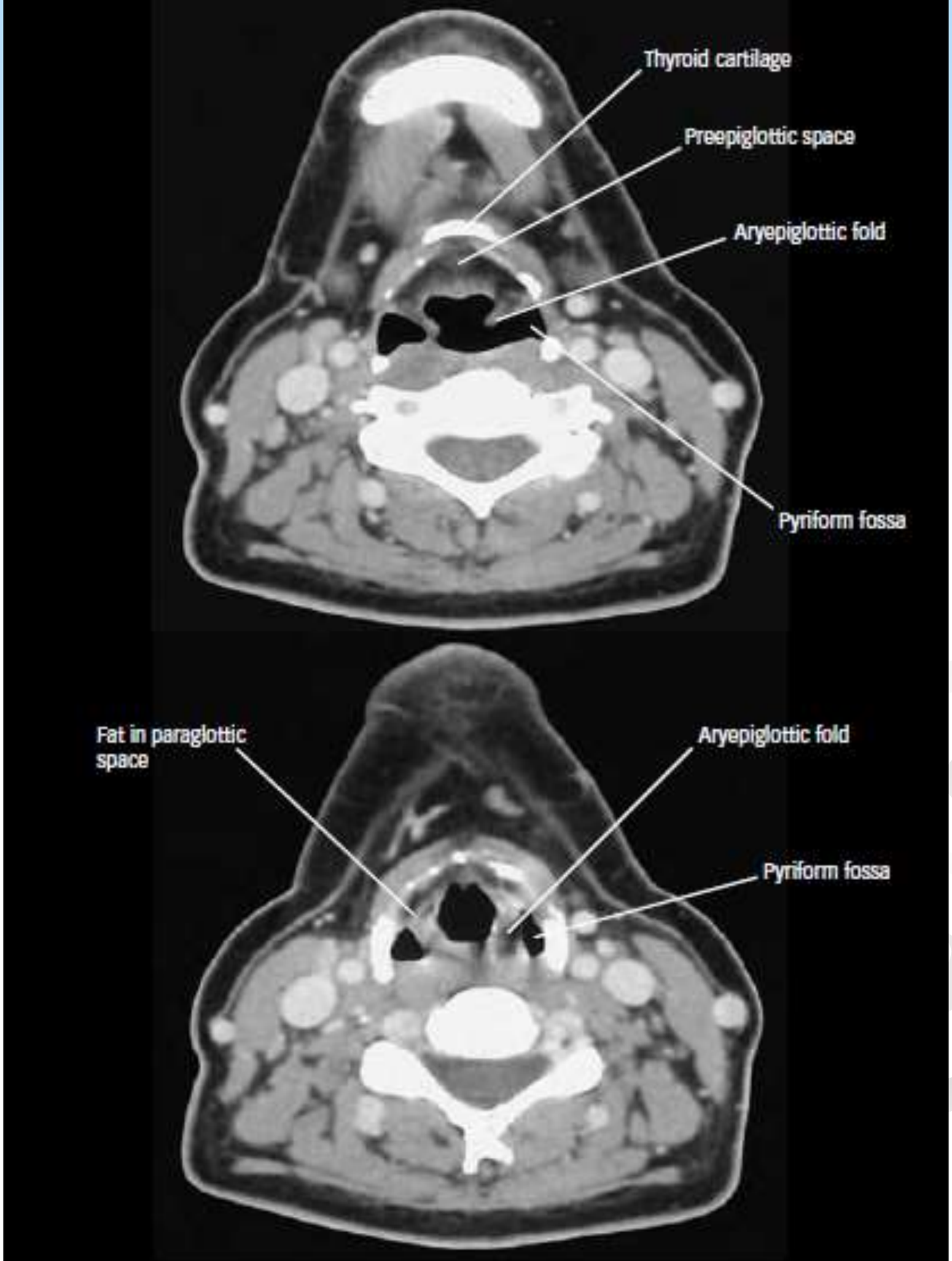
Quick review

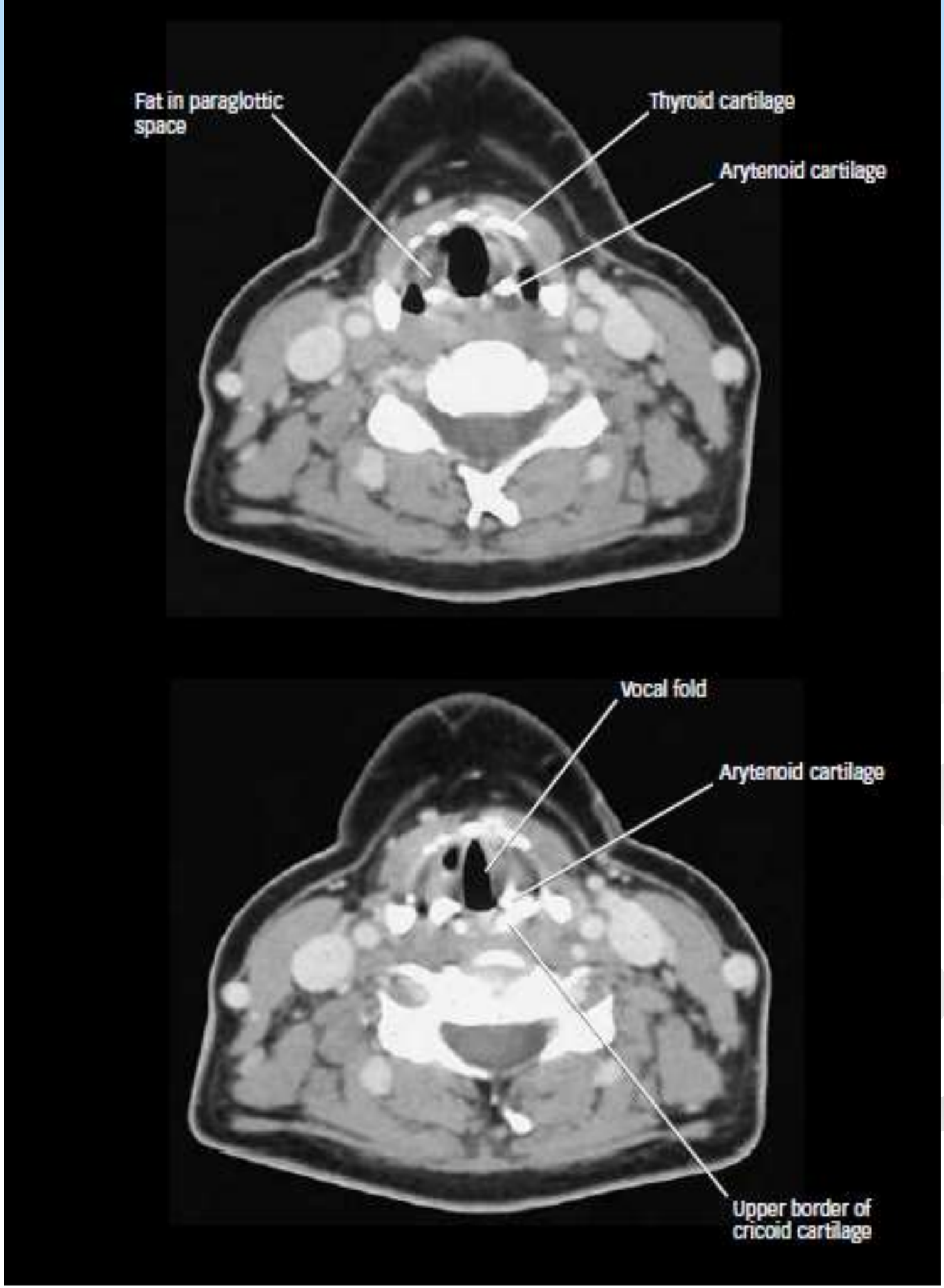

1
2
3
4
5

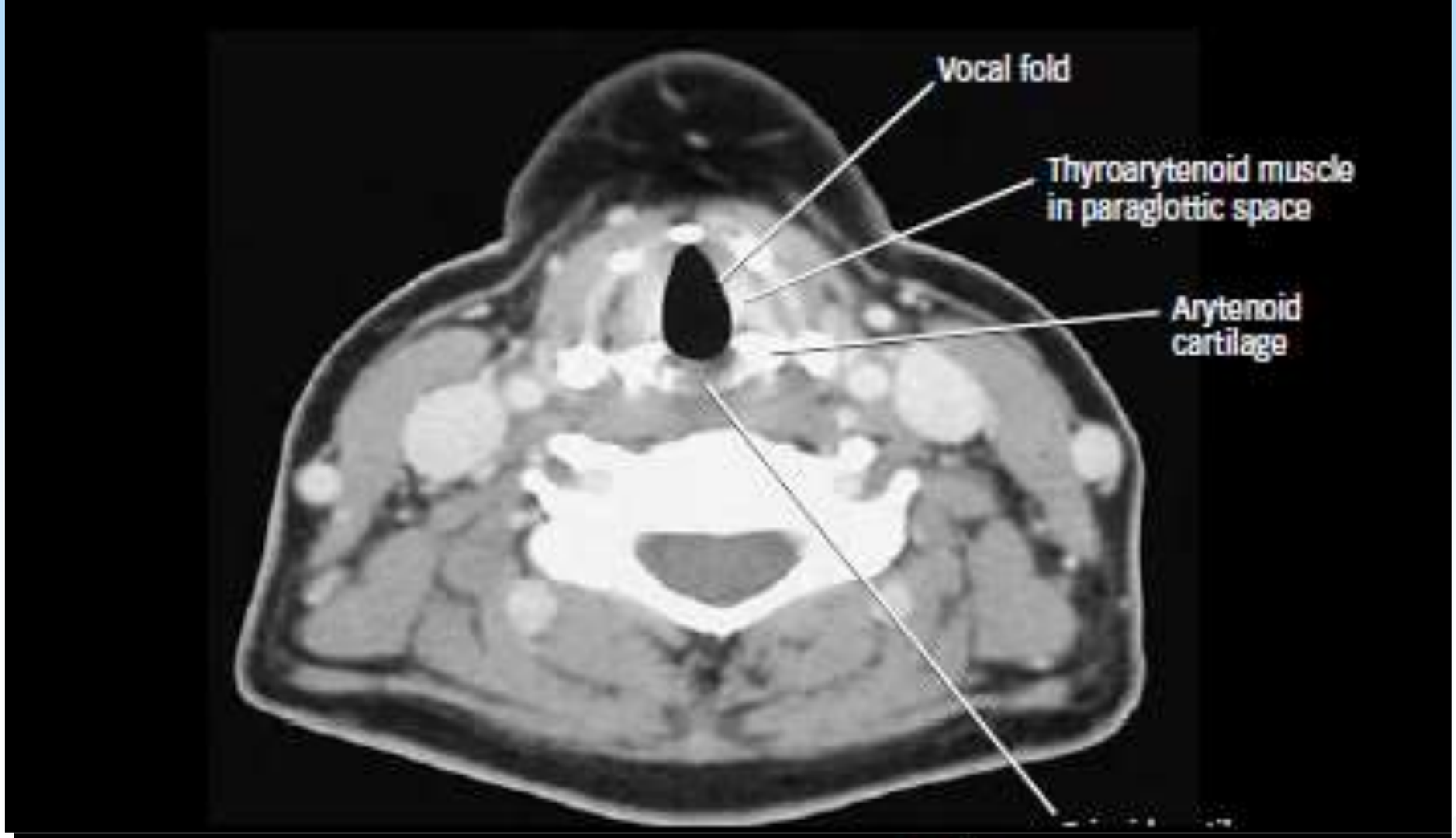

Hypopharynx
P
P



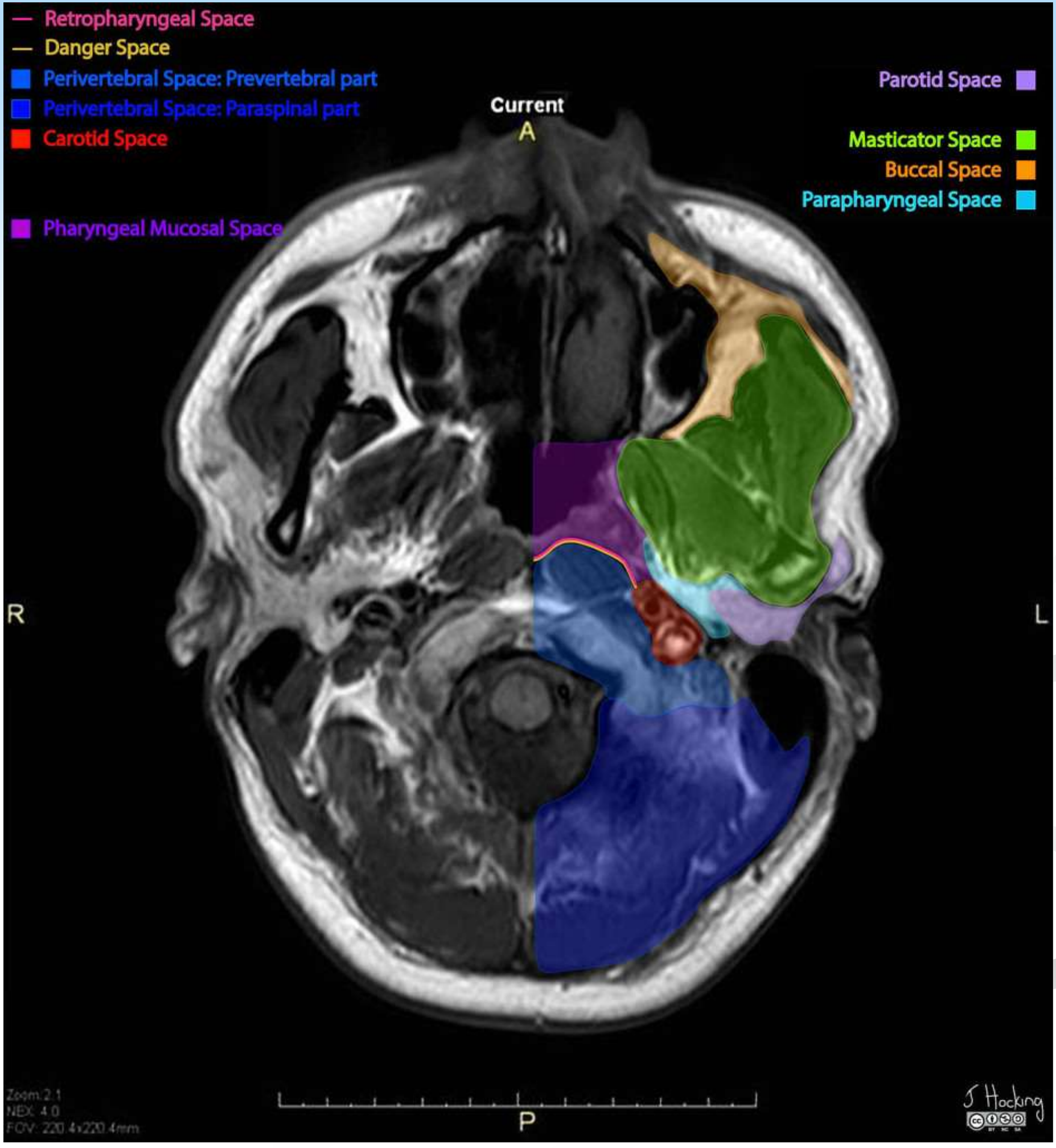

Vallecula
Mandible
Hyoid bone
Epiglottis
Submandibular gland
Sternocleido mastoid
Preepiglottic space
Thyroid cartilage
Pyriform fossa
Epiglottis


Thyroid cartilage
Preepiglottic space
Aryepiglottic fold
Pyriform fossa
Fat in paraglottic space
Aryepiglottic fold
Pyriform fossa


Fat in paraglottic space
Thyroid cartilage
Arytenoid cartilage
Vocal fold
Arytenoid cartilage
Upper border of cricoid cartilage


Vocal fold
Thyroarytenoid muscle in paraglottic space
Arytenoid cartilage


Trachea
Cricoid cartilage
Thyroid gland
Thyroid cartilage


Retropharyngeal Space
Danger Space
Perivertebral Space: Prevertebral part
Perivertebral Space: Paraspinal part
Carotid Space
Pharyngeal Mucosal Space
Current
A
Parotid Space
Masticator Space
Buccal Space
Parapharyngeal Space
R
L
P
Zoom:2.1
NEX: 4.0
FOV: 220.4x220.4mm
S Hocking


Thank
You!