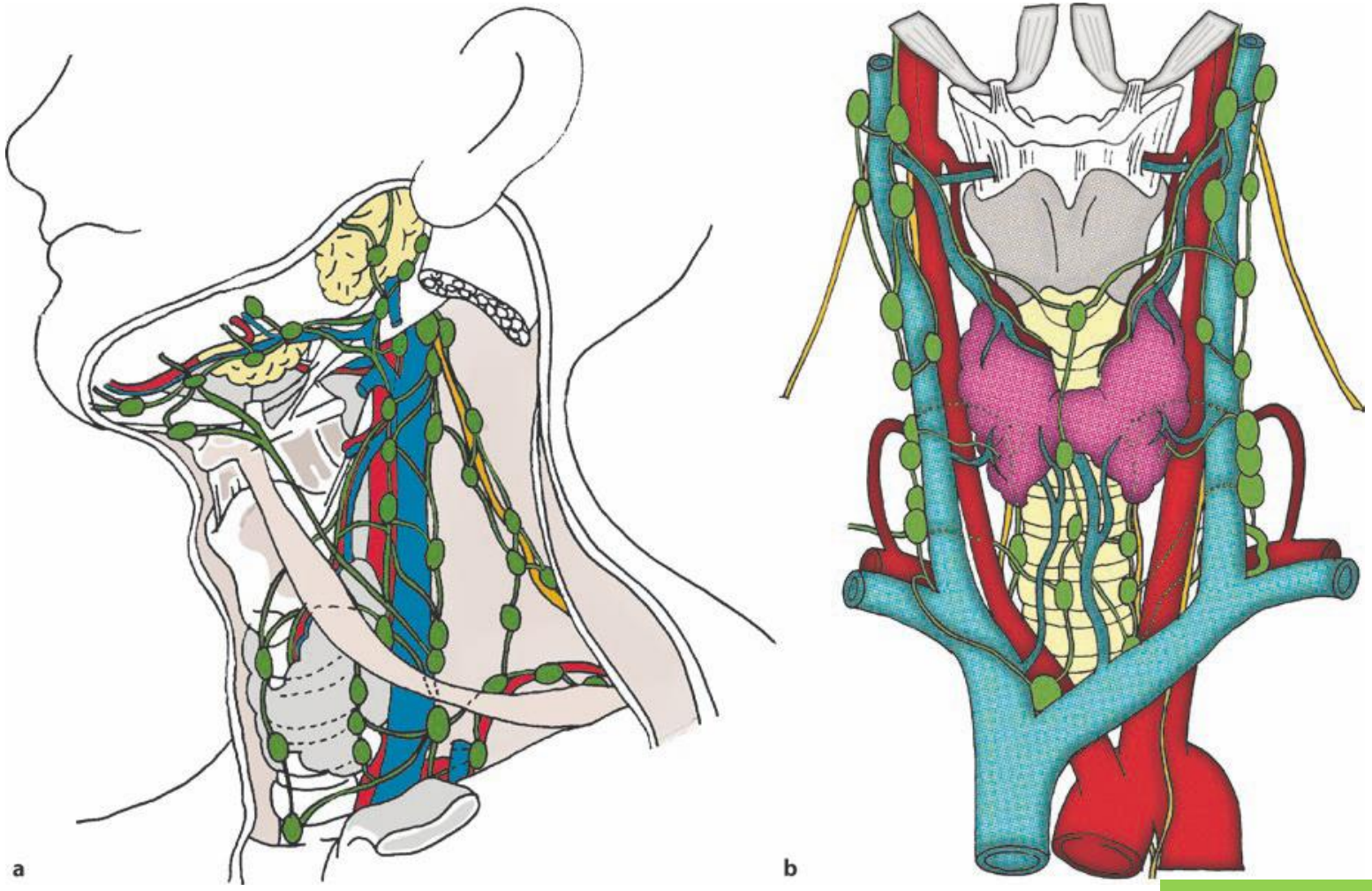
Delineation of Nodal Volume in HNC (N0 & N+)



ICRO-SUN PG Course

3rd September, 2022

Dr Manoj Gupta,
Prof & Head
AIIMS, Rishikesh.

Management of Neck

Not all the neck nodes are involved in all sites.

Fixed and Predictable Pattern of regional spread to Nodes.

↓

Treating whole neck in all patients make no sense.

↓ **IMRT**

Selective neck irradiation similar to selective neck dissection

↓

Location of the nodes and Pattern of spread

Location of Neck Nodes

- **Robbins Classification:-** **Surgeons**
- **Brussels system**
- **Rotterdam system**

} **Radiation Oncologists**

- **RTOG Consensus Guidelines**

Due to discrepancies in different systems , a consensus guidelines was derived

Changes in Robbins classification

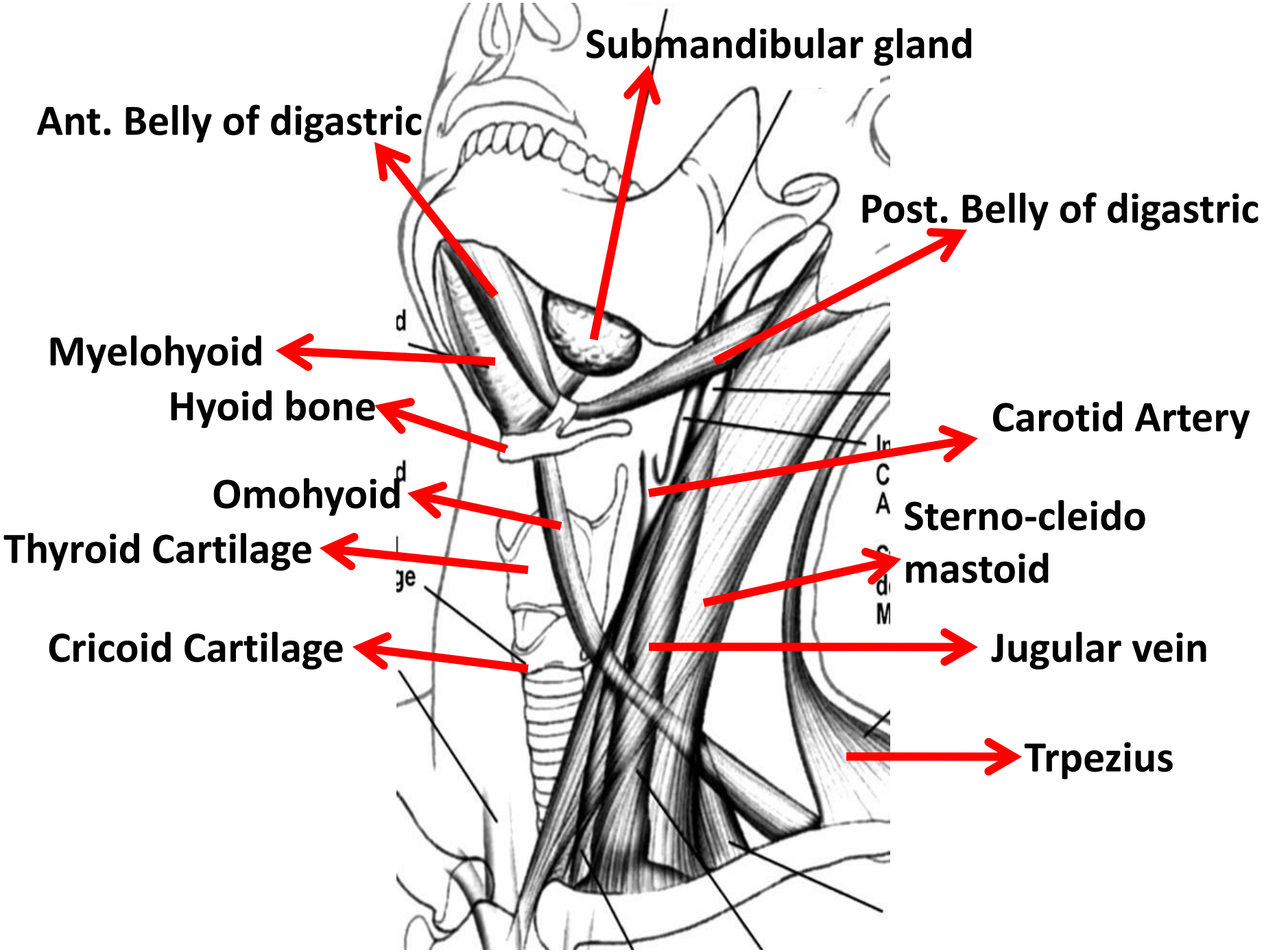
- **Based on surgical boundaries like muscles, nerves and vessels.**
- **But these structures may not be identifiable on CT.**
- **Cranial limit for level II was defined by surgeons at insertion of post belley of digastric muscle at mastoid.**
- **But this point may not be identifiable on CT.**
- **So cranial limit was modified to bony land mark like cervical vertebrae.**

Changes in Robbins classification

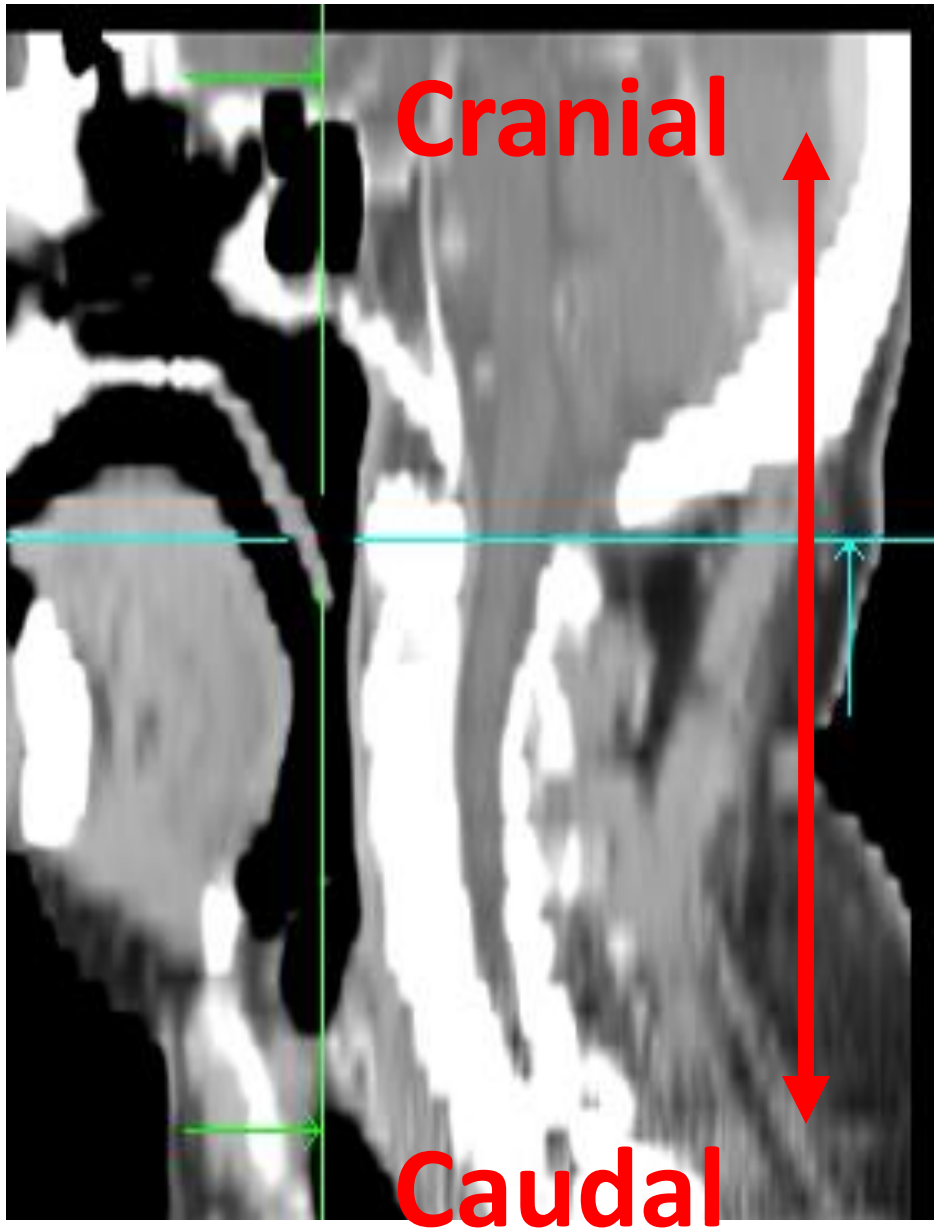
- **Similarly, Robbins defined the caudal limit of level III as the point at which the omohyoid muscle crossed the internal jugular vein (IJV); again not clearly identifiable on CT.**
- **So easily identifiable landmark is chosen like lower border of cricoid cartilage.**

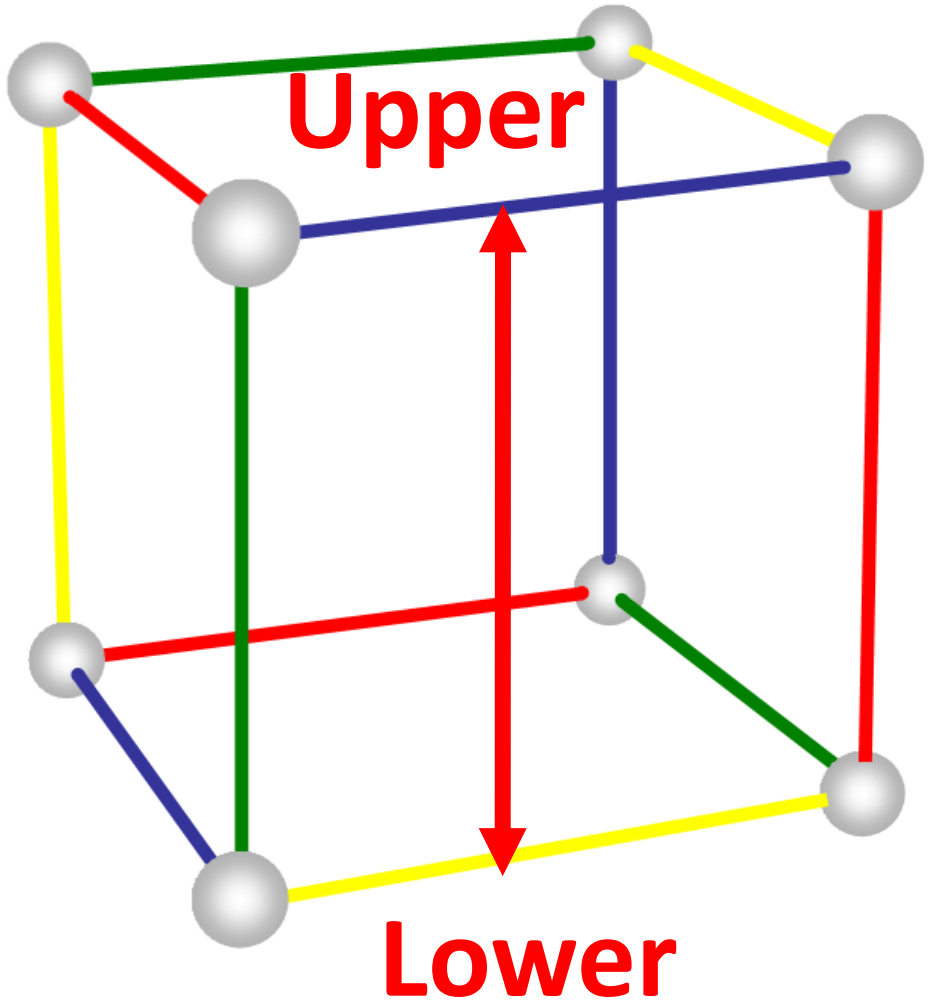
Changes in Robbins classification

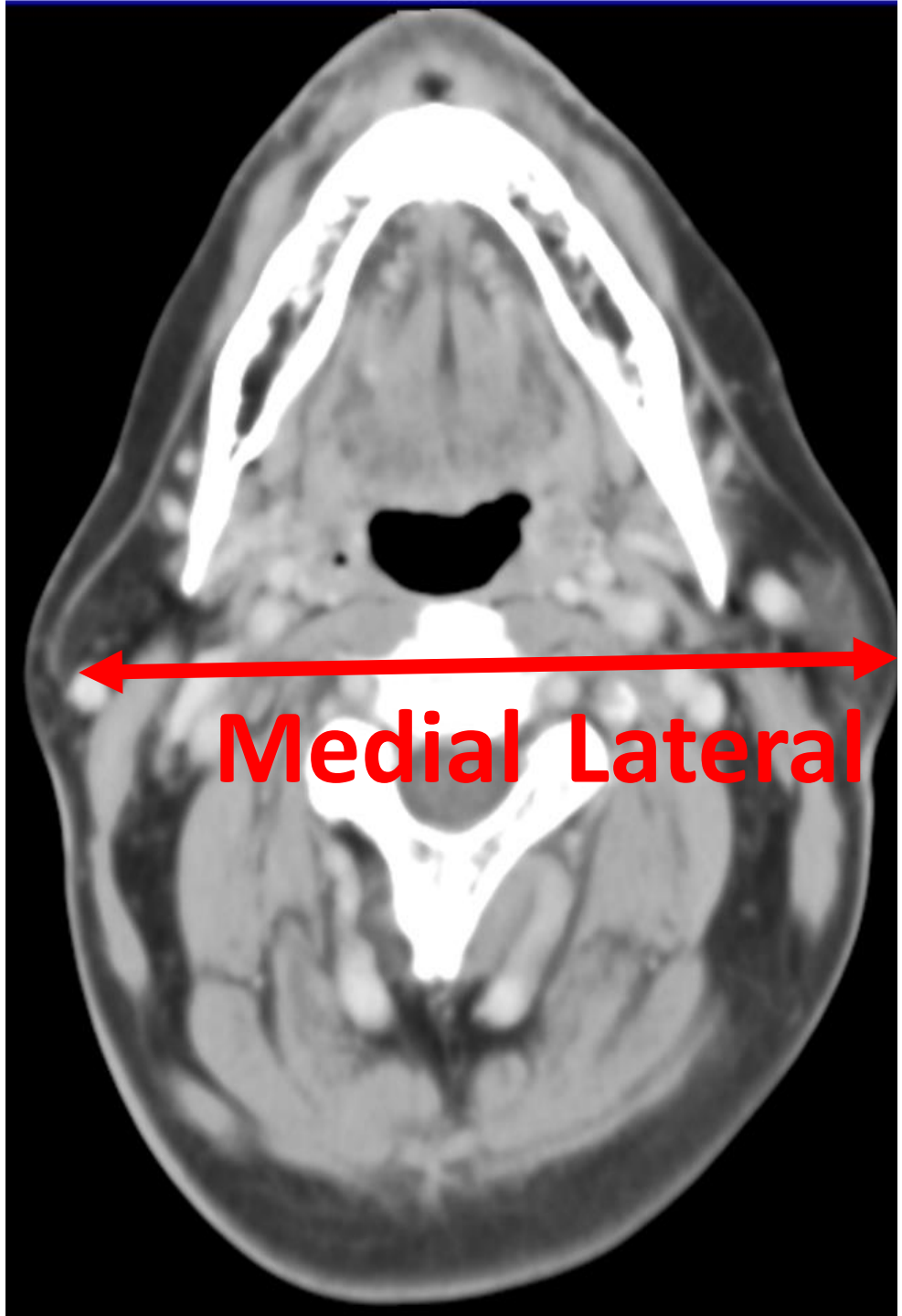
- **Robbins used the spinal accessory nerve (SAN) to sub-divide level II into IIa (anterior to a vertical plane defined by the nerve) and IIb (posterior to that plane).**
- **SAN cannot be identified on CT scans,**
- **So, posterior edge of the IJV for the subdivision between levels IIa and IIb**

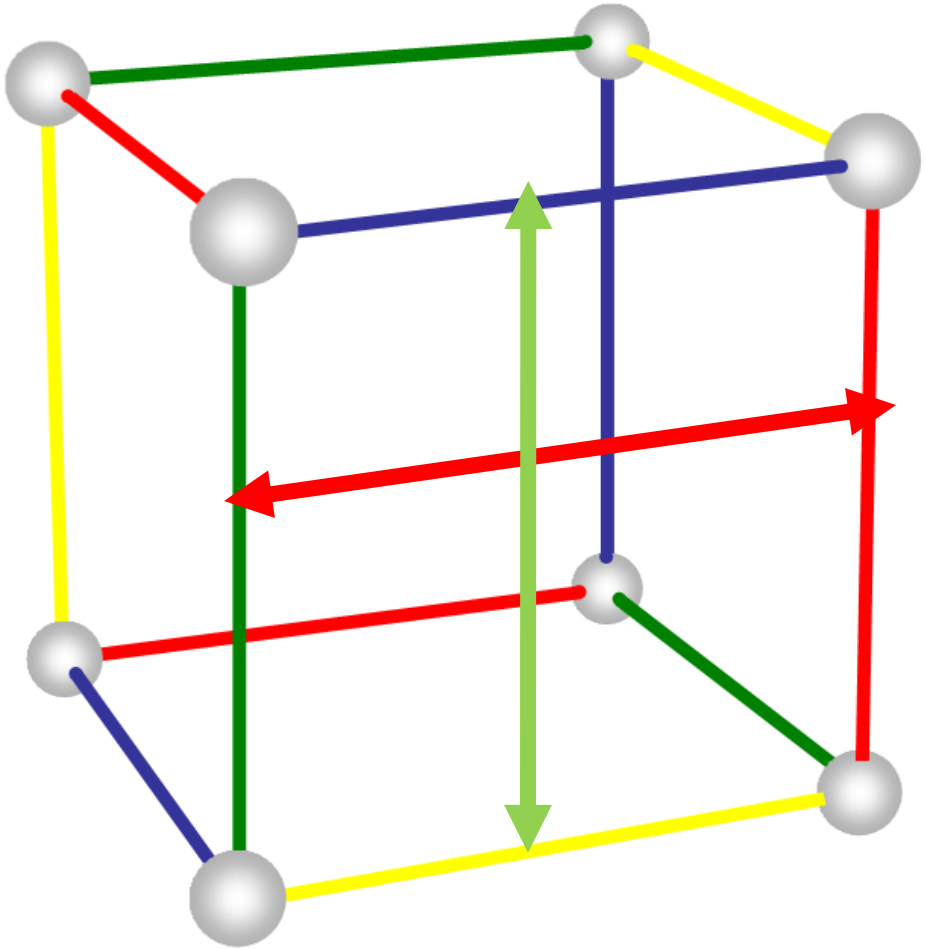

Submandibular gland
Ant. Belly of digastric
Post. Belly of digastric
Myelohyoid
Hyoid bone
Carotid Artery
Omohyoid
Sterno-cleido
mastoid
Thyroid Cartilage
Cricoid Cartilage
Jugular vein
Trpezius

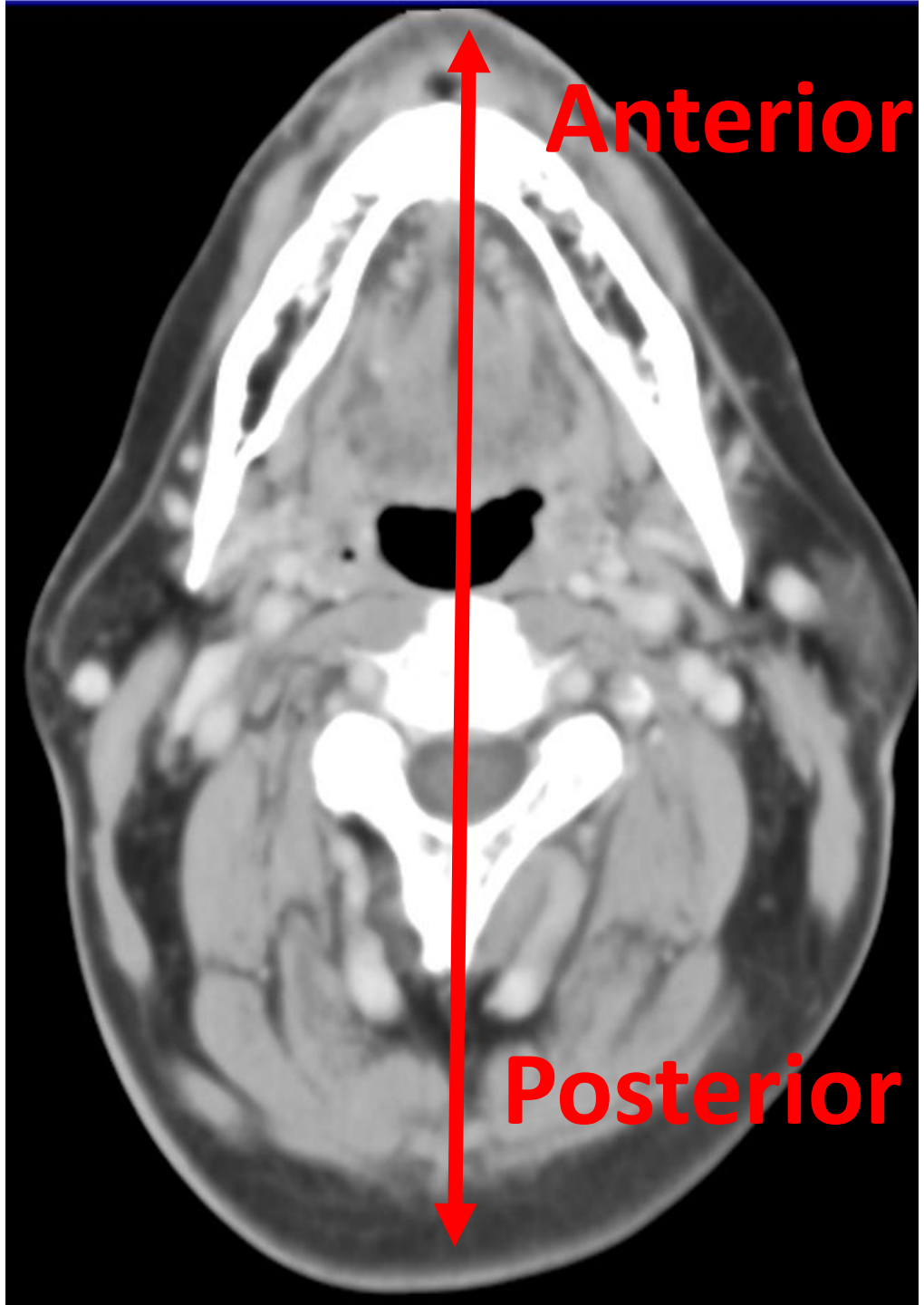
Boundaries

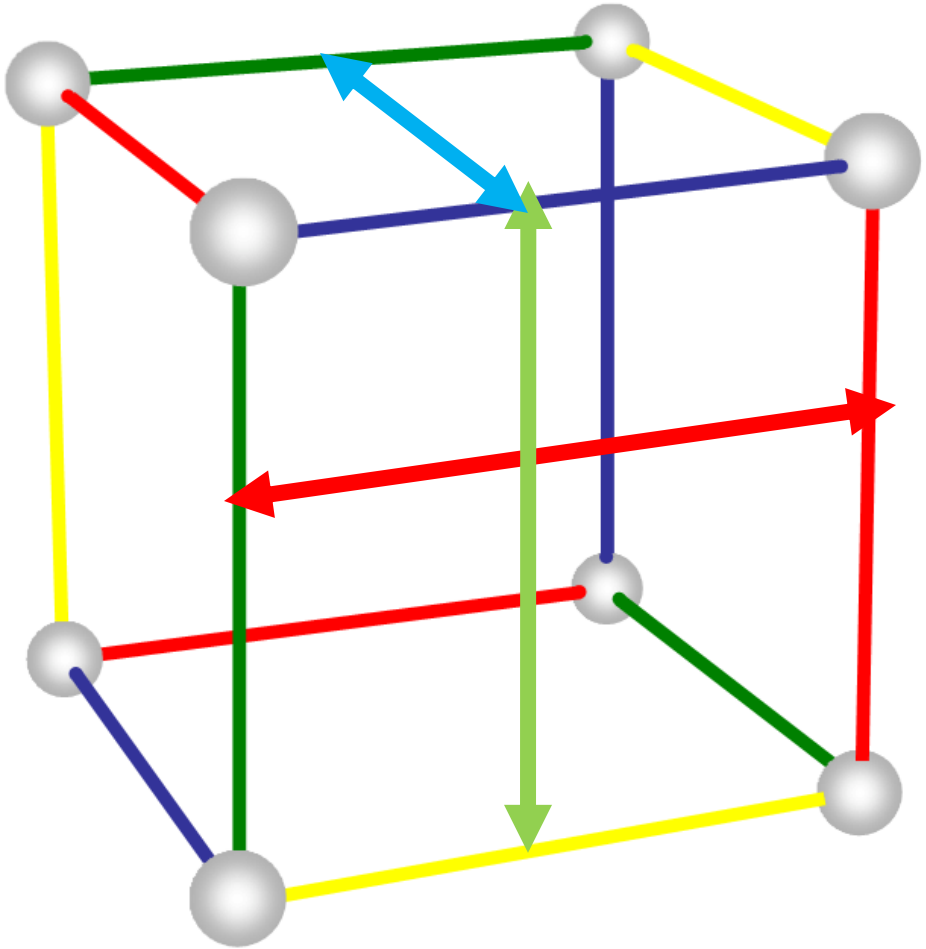


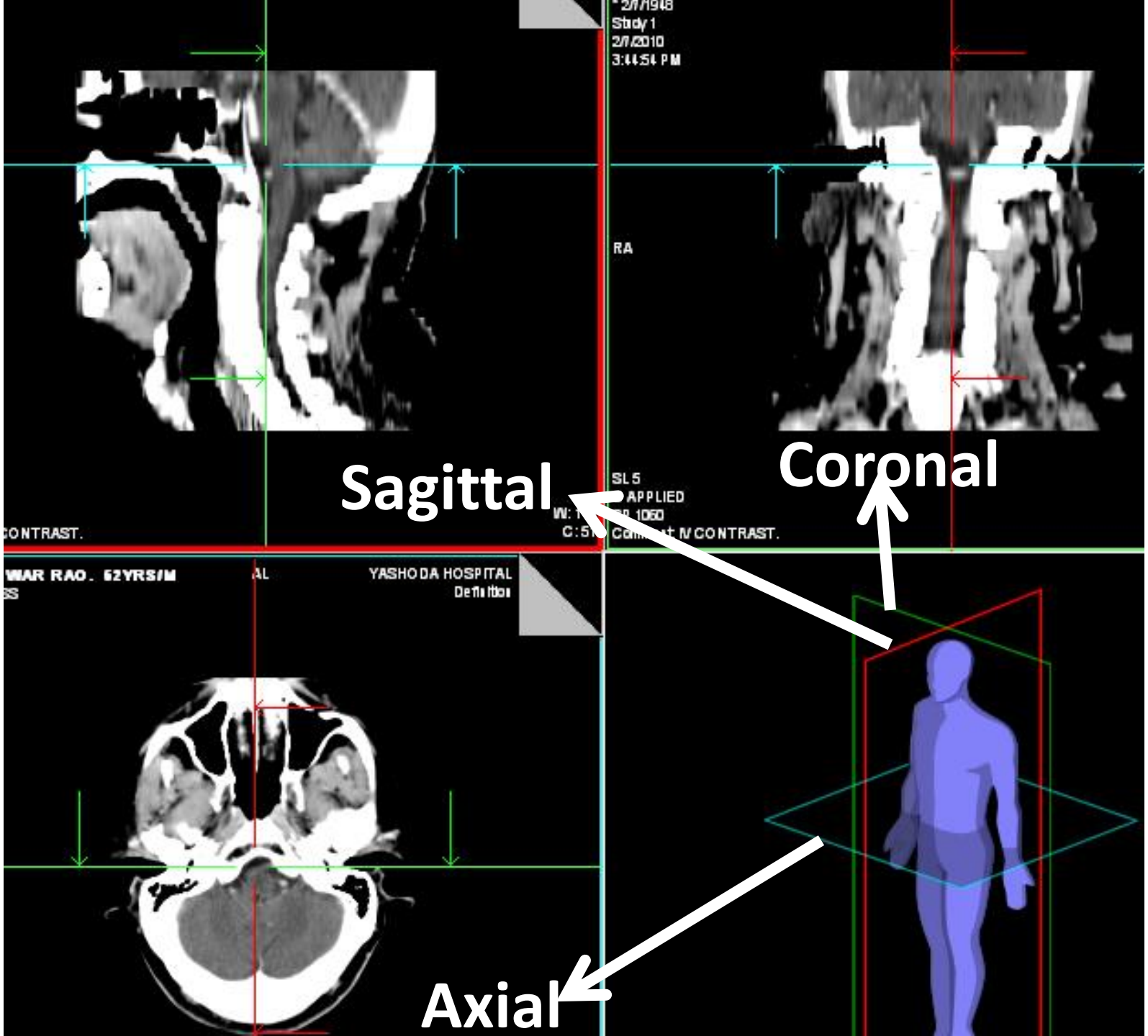



Medial Lateral




Anterior
Posterior




Study 1
RA
SL 5
APPLIED
CONTRAST.
YASHODA HOSPITAL
Sagittal
Coronal
Axial

N0 Neck

ELSEVIER

Radiotherapy and Oncology 69 (2003) 227–236

RADIOTHERAPY & ONCOLOGY

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CT-based delineation of lymph node levels and related CTVs in the node-negative neck: DAHANCA, EORTC, GORTEC, NCIC, RTOG consensus guidelines

Vincent Grégoire[a,*,1], Peter Levendag[b,1], Kian K. Ang[c], Jacques Bernier[d], Marijel Braaksma[b], Volker Budach[e], Cliff Chao[c], Emmanuel Coche[f], Jay S. Cooper[c], Guy Cosnard[f], Avraham Eisbruch[c], Samy El-Sayed[g], Bahman Emami[c], Cai Grau[h], Marc Hamoir[i], Nancy Lee[c], Philippe Maingon[j], Karin Muller[b], Hervé Reychler[k]

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journal homepage: www.thegreenjournal.com

Guidelines

Delineation of the neck node levels for head and neck tumors: A 2013 update. DAHANCA, EORTC, HKNPCSG, NCIC CTG, NCRI, RTOG, TROG consensus guidelines ☆

Vincent Grégoire [a,*], Kian Ang [b], Wilfried Budach [c], Cai Grau [d], Marc Hamoir [e], Johannes A. Langendijk [f], Anne Lee [g], Quynh-Thu Le [h,i], Philippe Maingon [j], Chris Nutting [k], Brian O'Sullivan [l], Sandro V. Porceddu [m], Benoit Lengele [n]

N+ve Neck

Radiotherapy and Oncology 79 (2006) 15-20
www.thegreenjournal.com

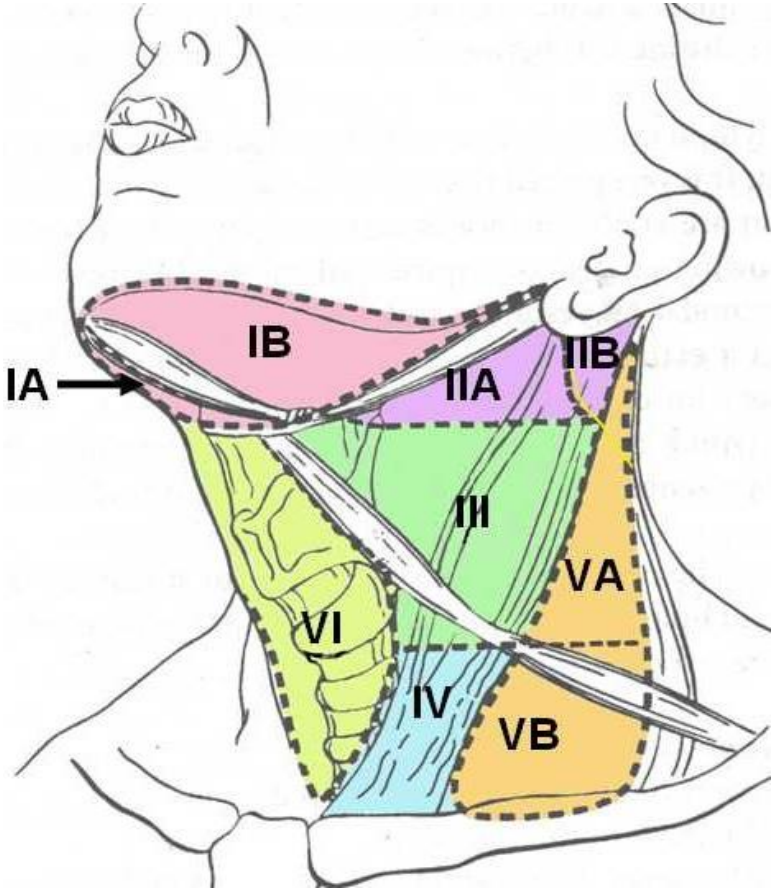
Target volume delineation

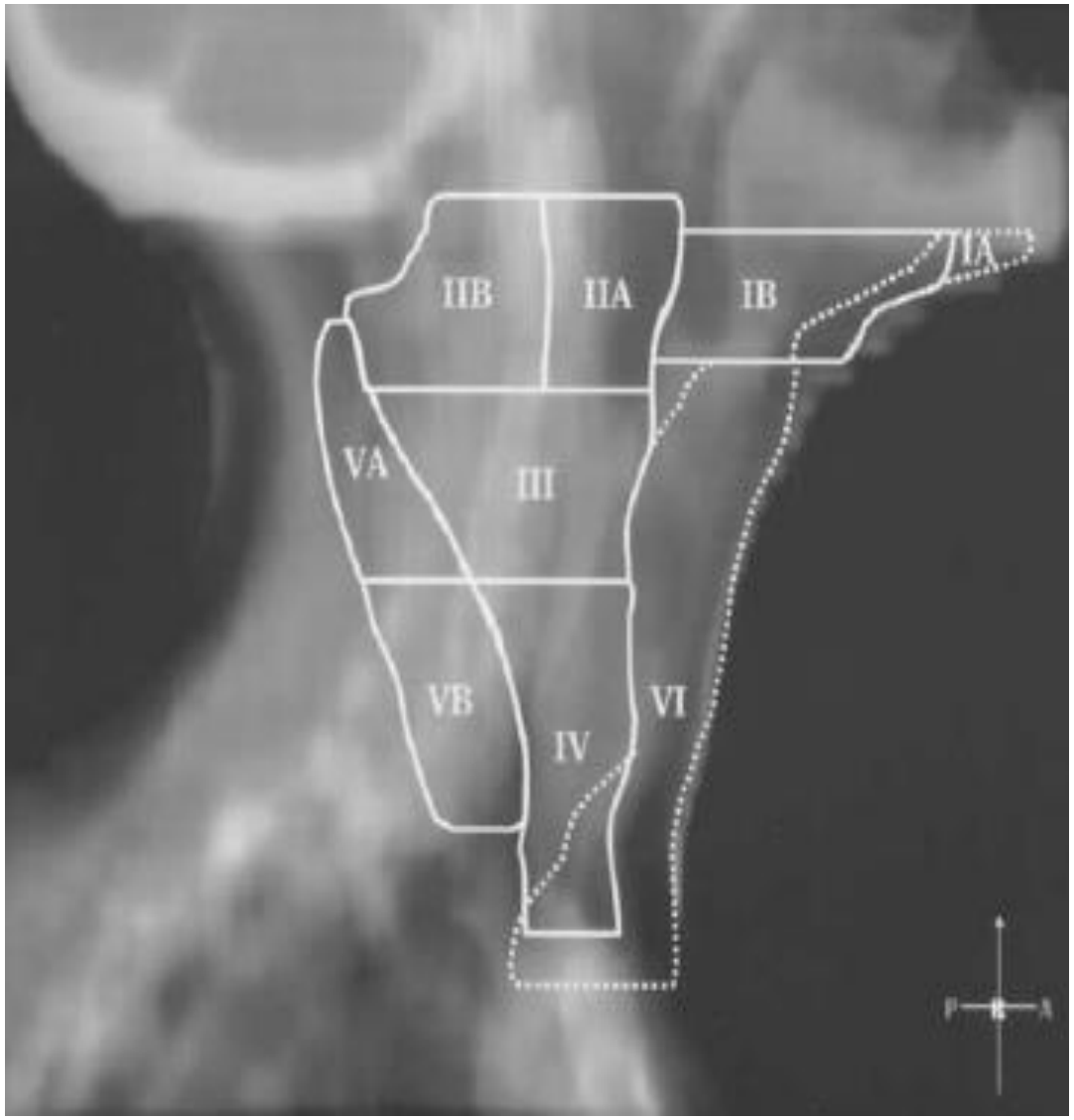
Proposal for the delineation of the nodal CTV in the node-positive and the post-operative neck

Vincent Grégoire[a,*], Avraham Eisbruch[b], Marc Hamoir[c], Peter Levendag[d]

Classification of the Neck Nodes

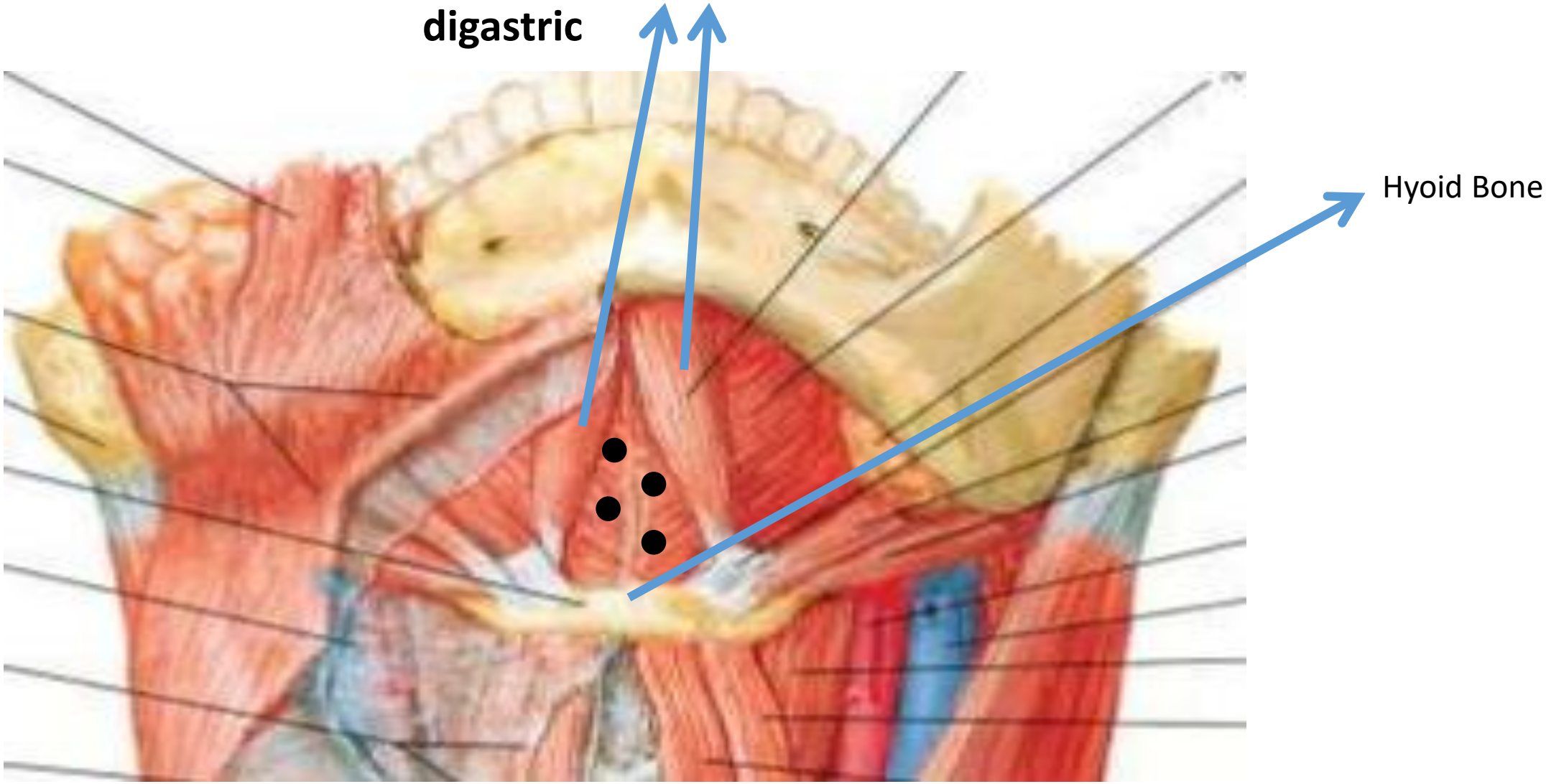
Level I to Level VI





• Level Ia (Sub-mental)

- **Sub-mental triangle:**
  - **Bounded by two anterior belly of digastric**

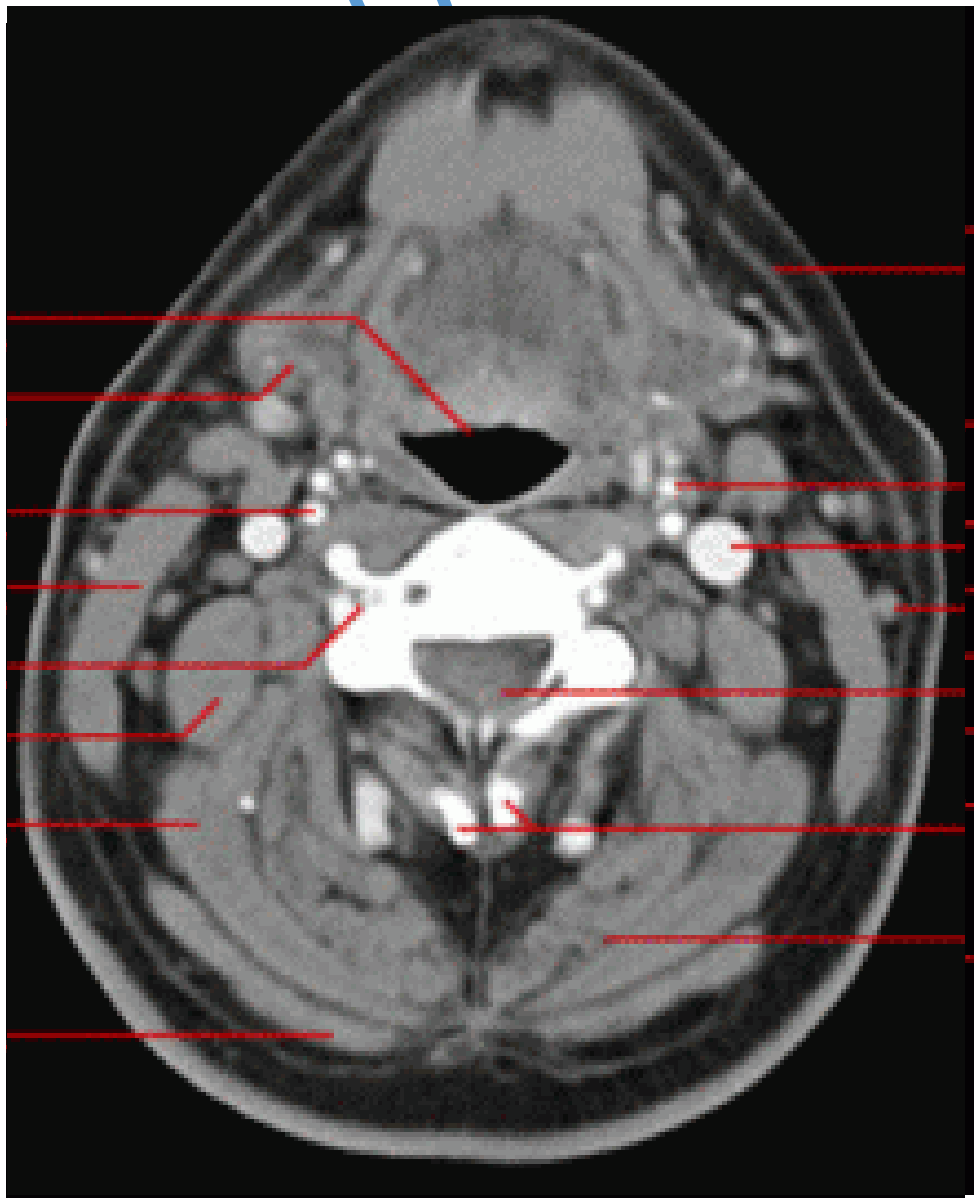


Primary for Ia

- **Floor of the mouth.**
- **Anterior oral tongue.**
- **Anterior mandibular alveolar ridge.**
- **lower lip.**

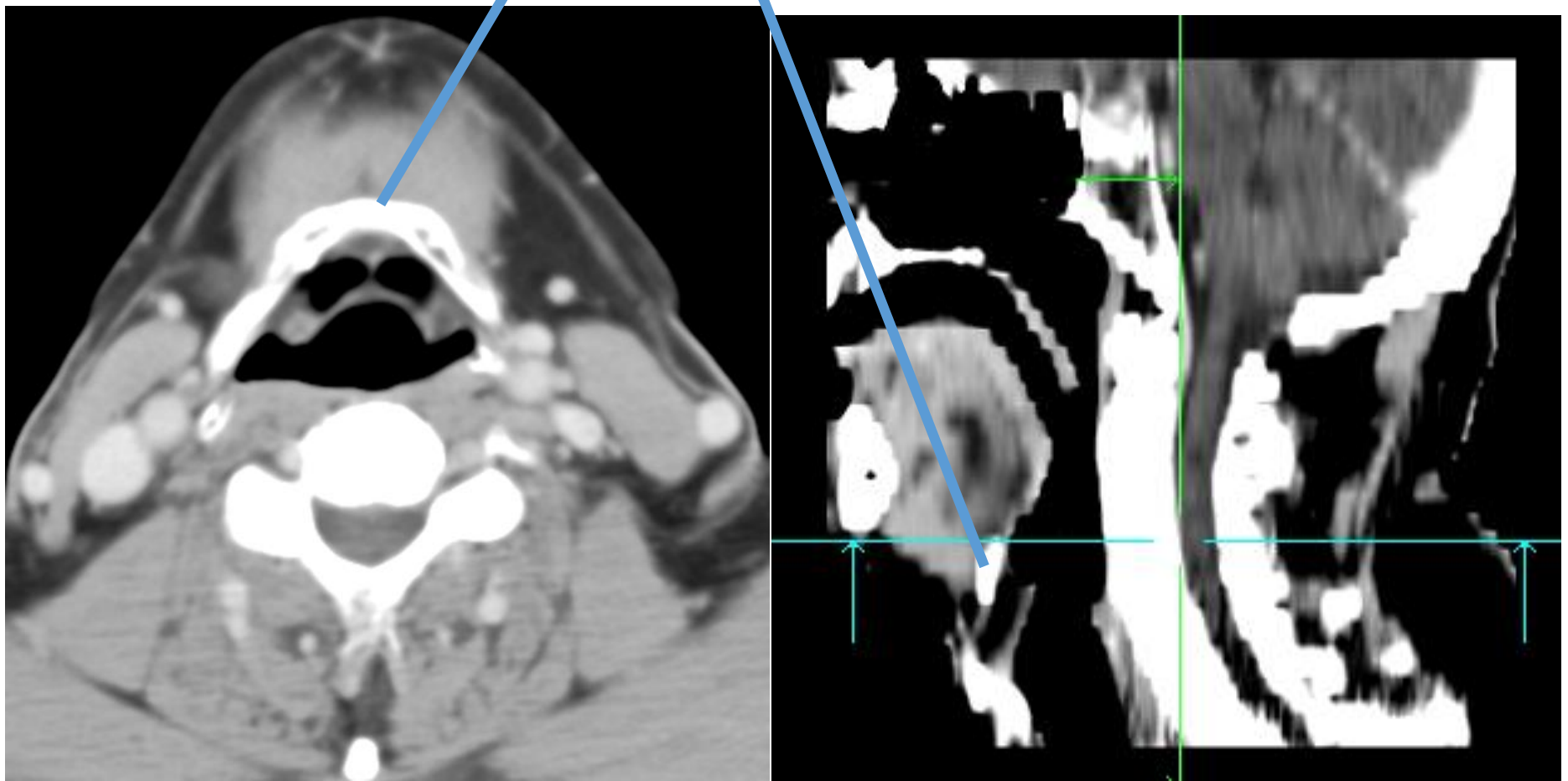
Cranial-> Geniohyoid muscle or a plane tangent to the basilar edge of the mandible.

Level Ia



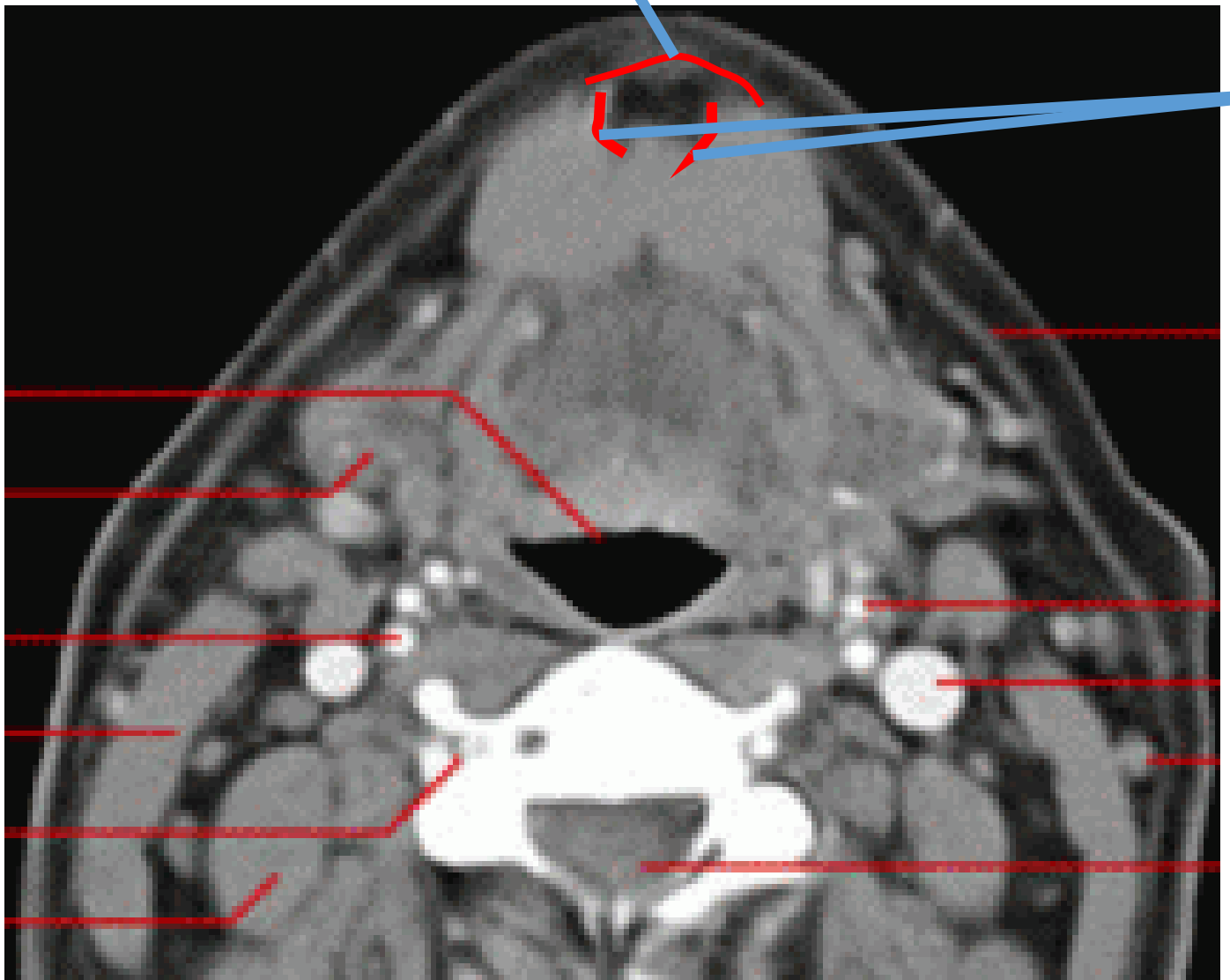
Level Ia

Caudal-> hyoid bone



Anterior-> Platysma muscle and the symphysis menti,

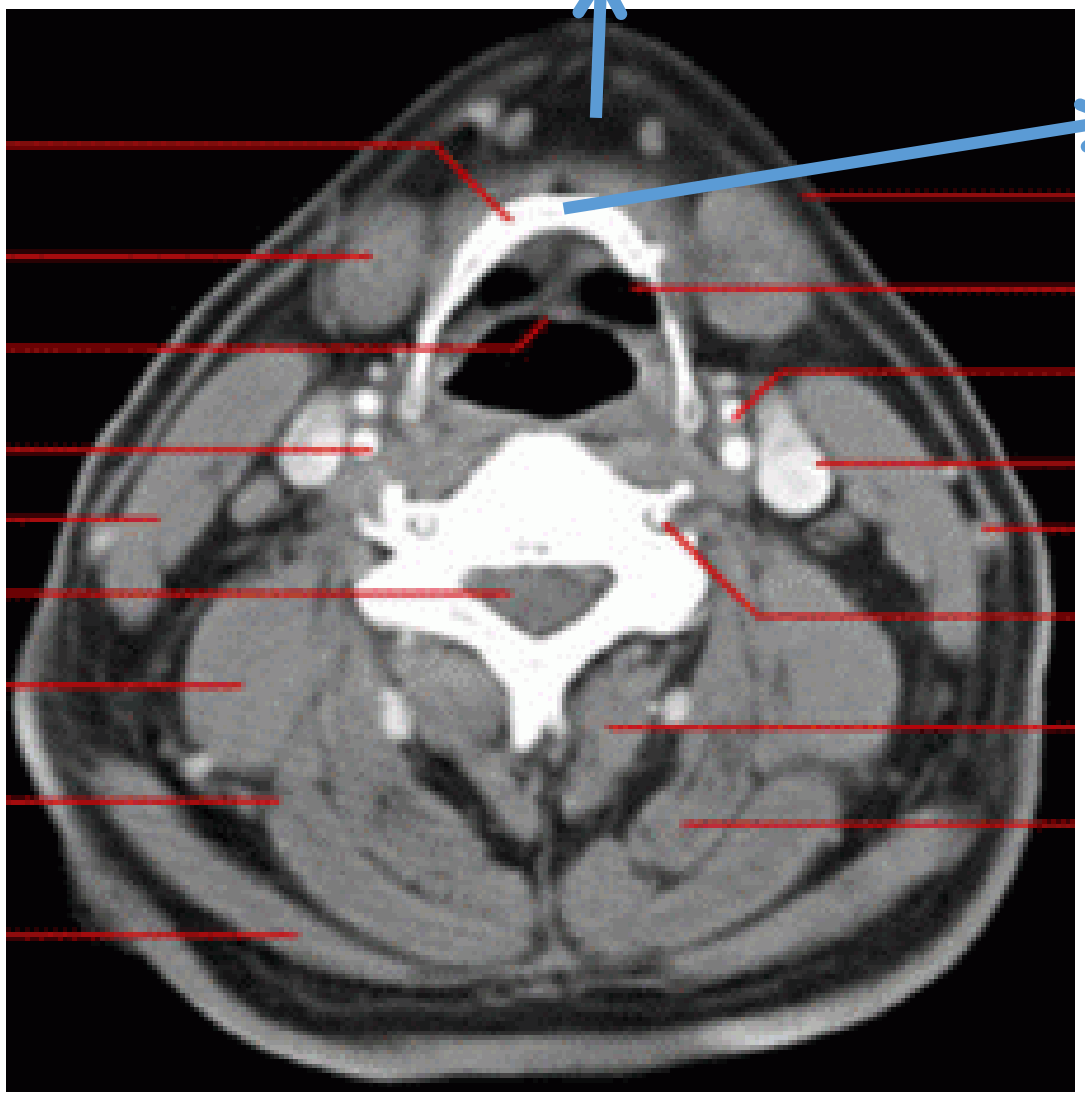
Lateral-> Medial edge of ant belly of two digastric muscles



Level Ia

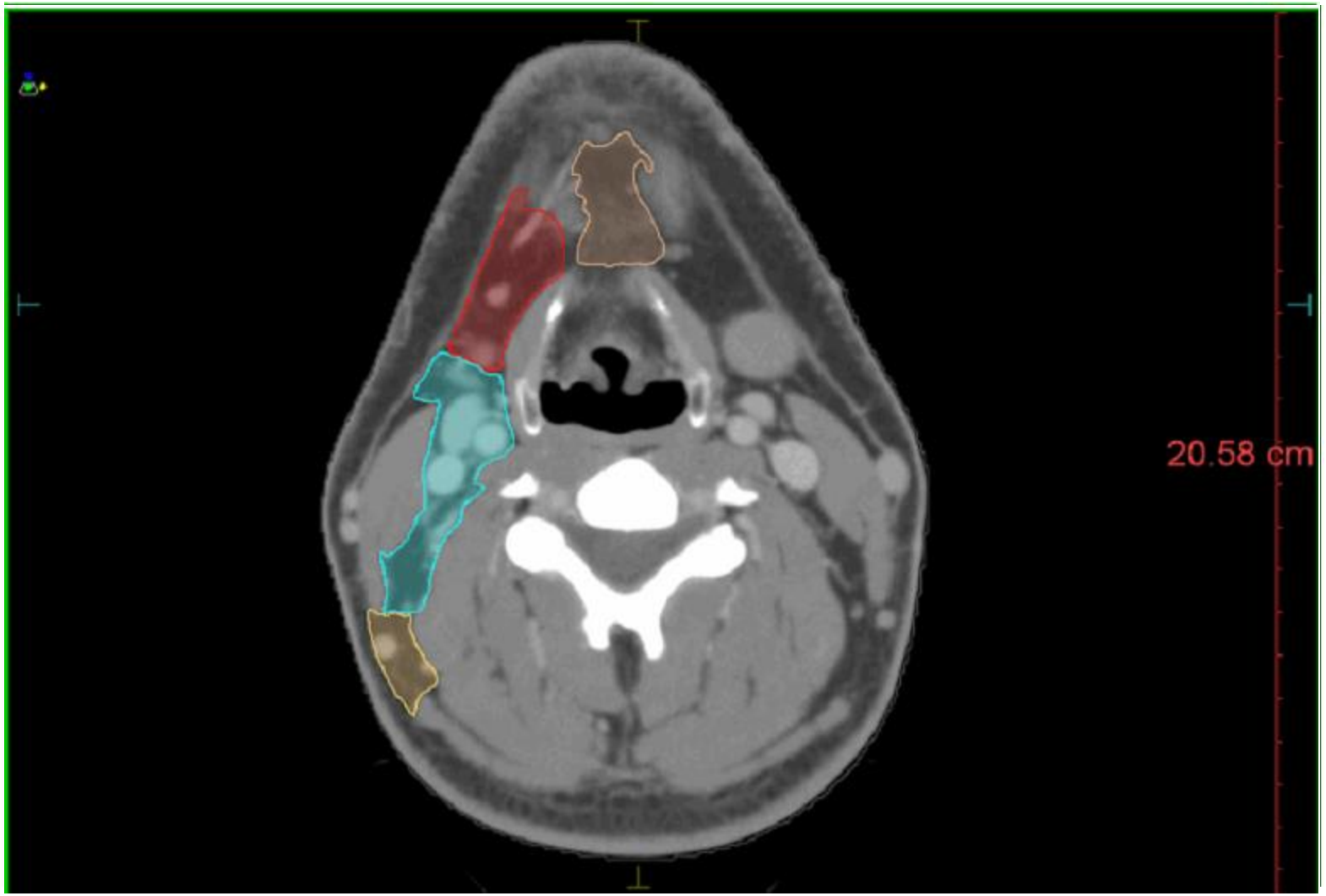
Medial-> region continues into the contralateral level Ia

Posterior -> body of the hyoid bone,



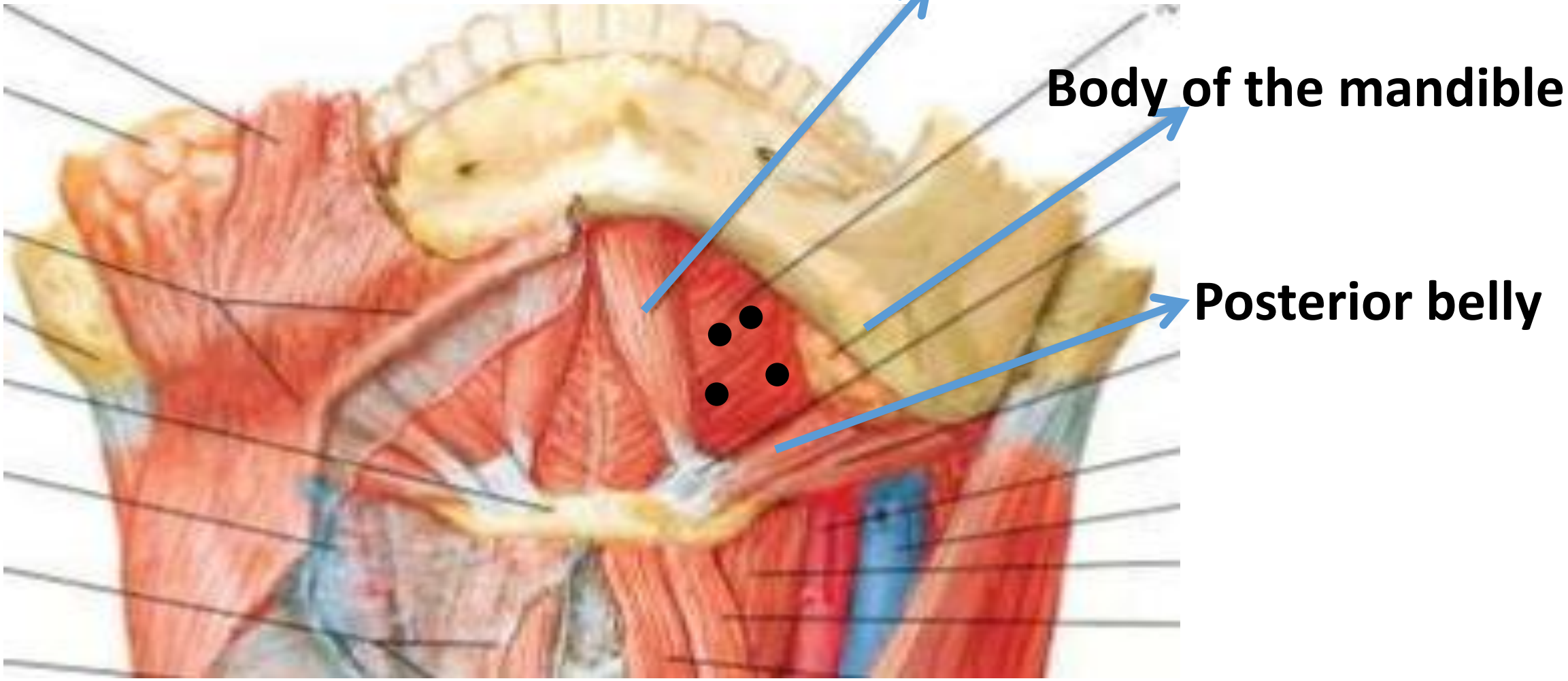
Level Ia

Contouring



- **Level Ib (Sub-mandibular)**

Sub-mandibular Triangle Formed by the Digastric Muscle

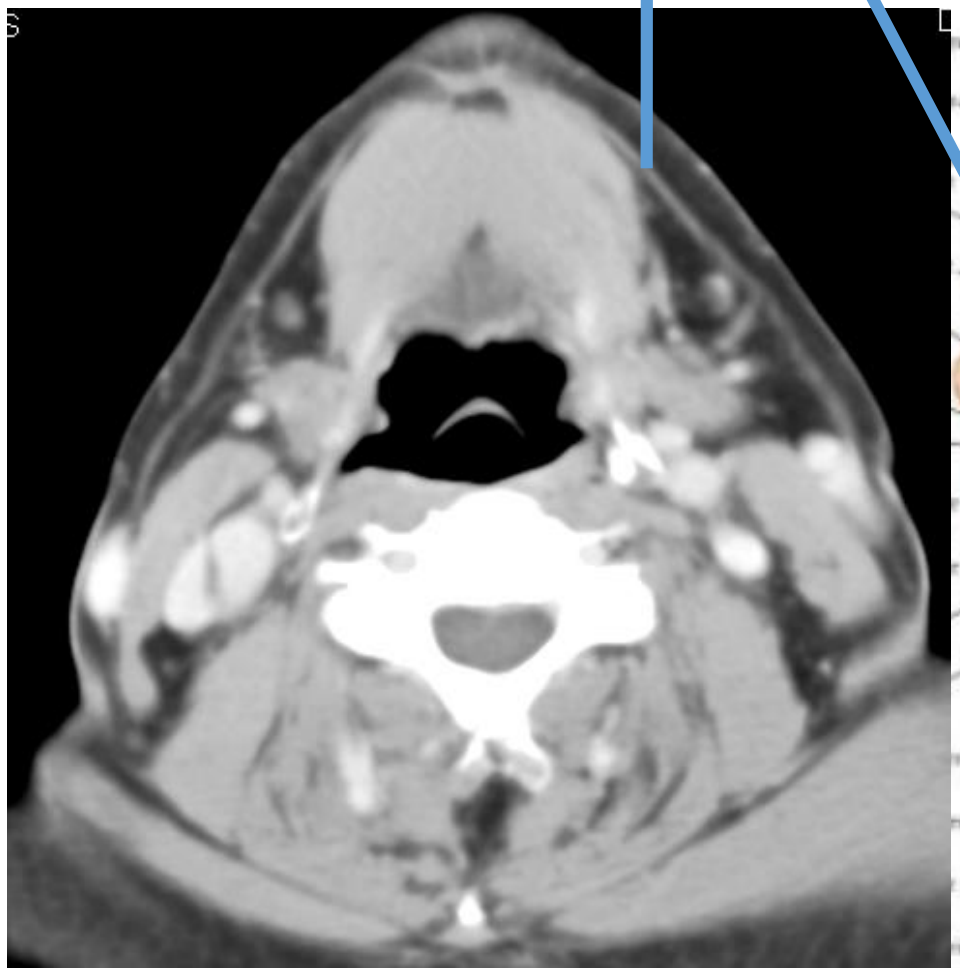


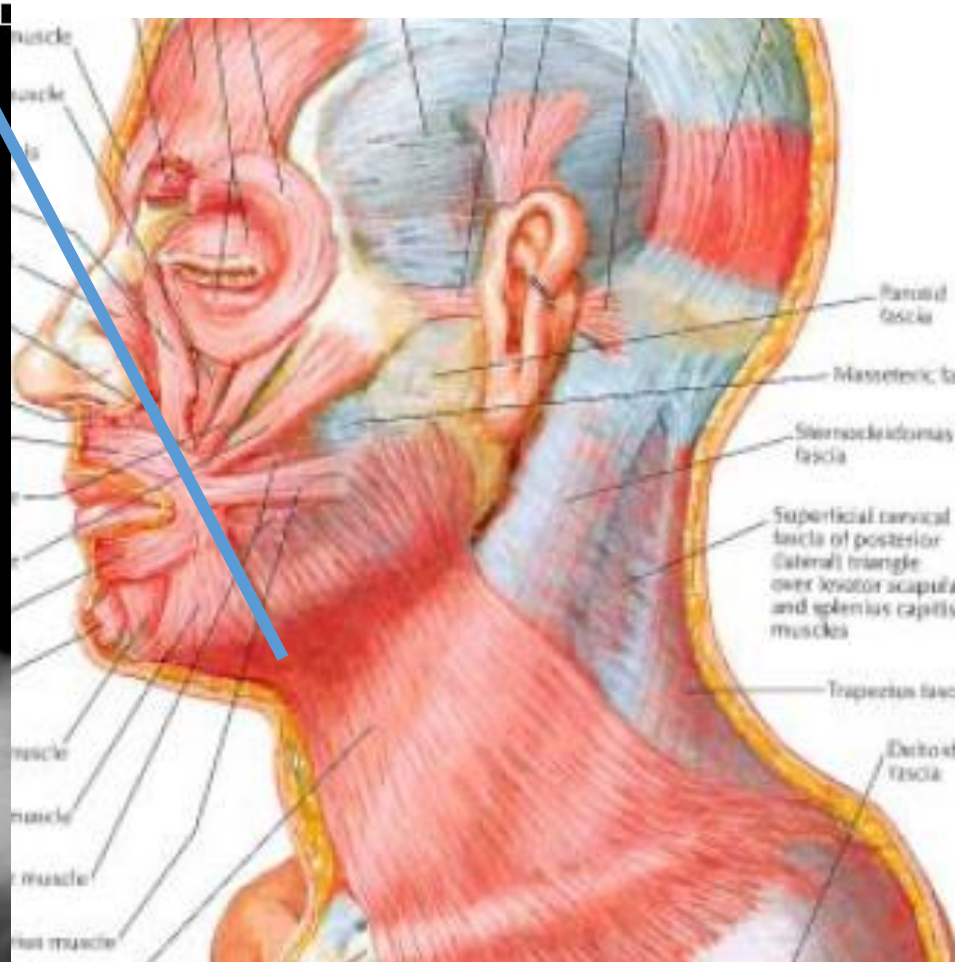
Primary for Ib

- **cancers of the oral cavity,**
- **anterior nasal cavity,**
- **soft tissue structures of the mid-face and**
- **submandibular gland.**

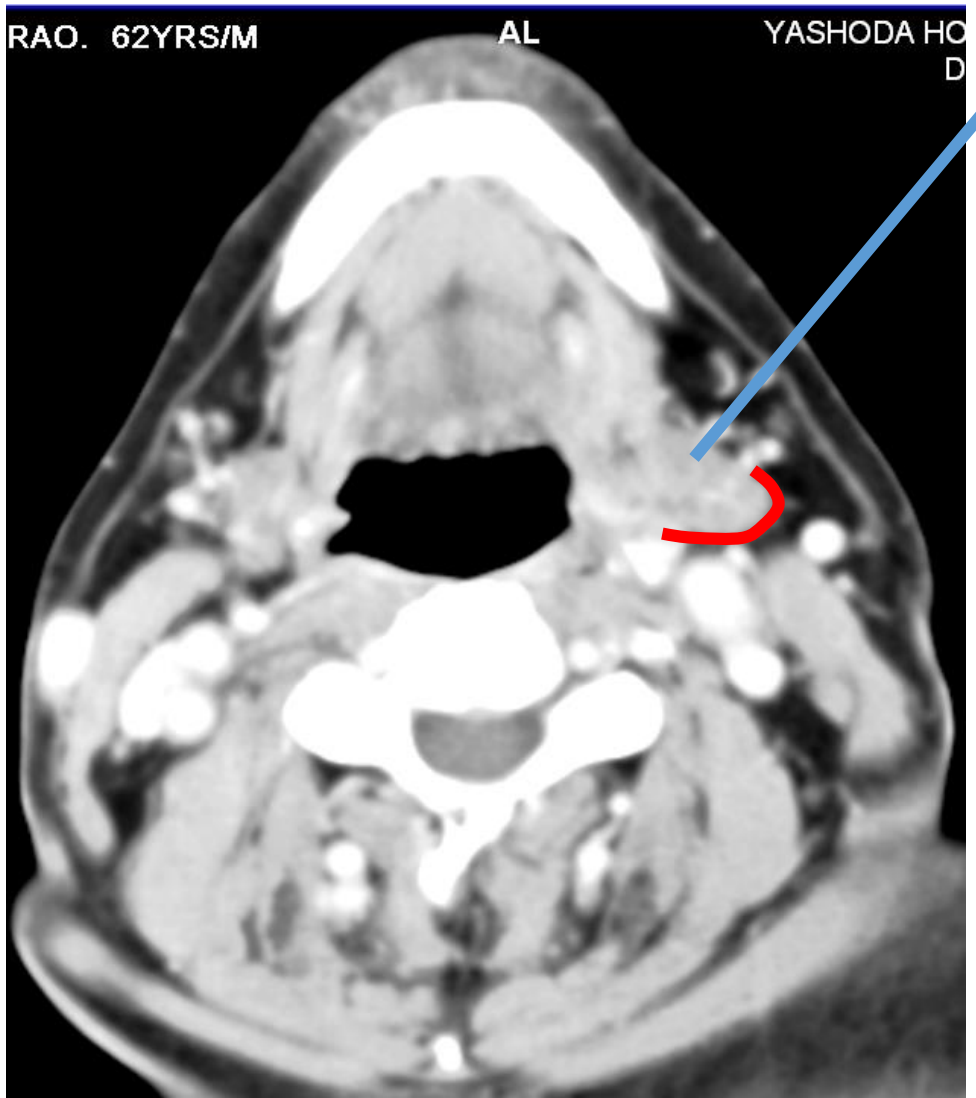
Anteriorly -> **Platysma muscle**

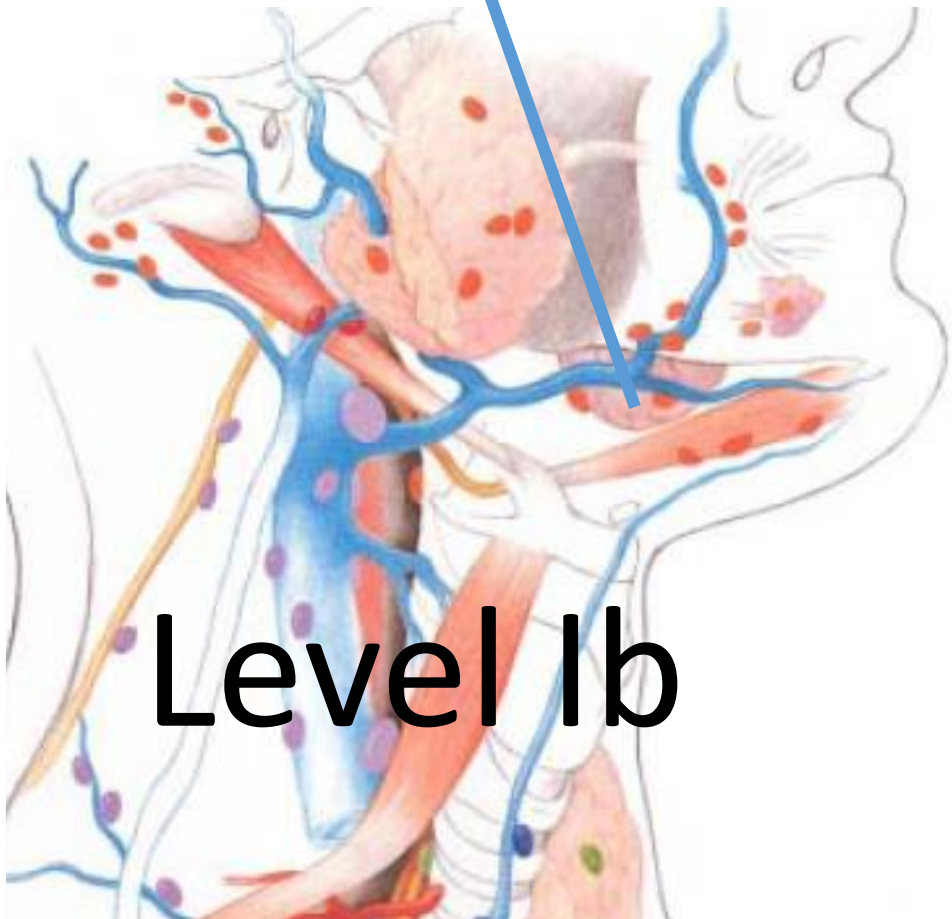
Level Ib





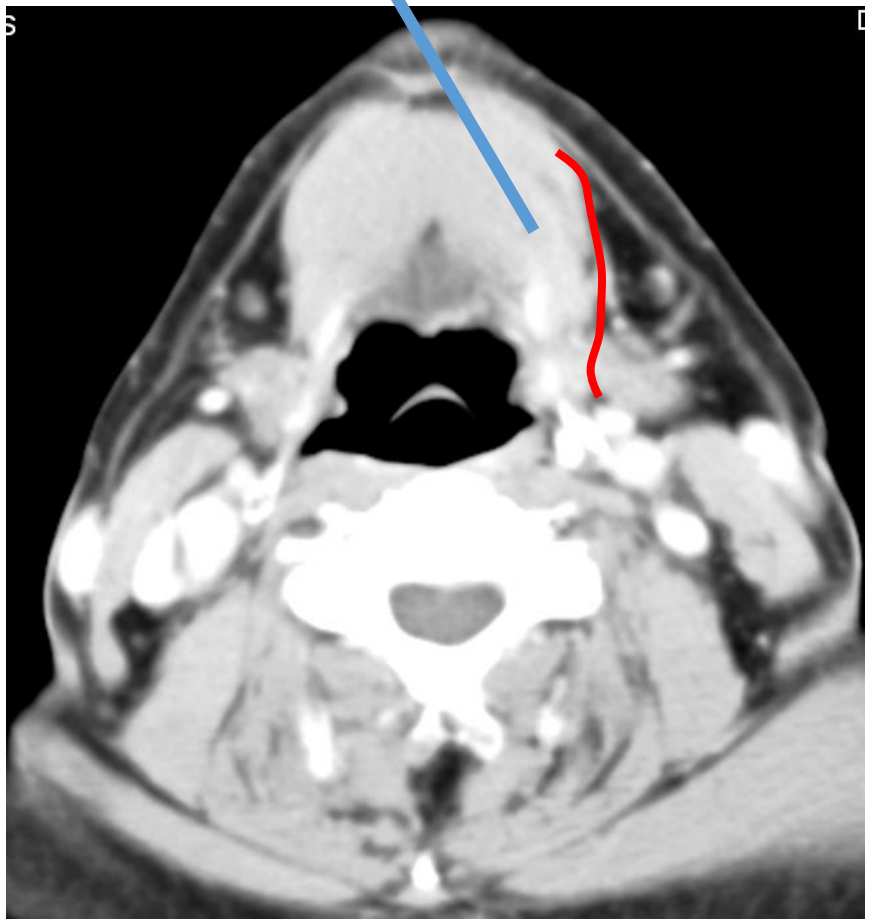
Posterior-> Posterior edge of the submandibular gland

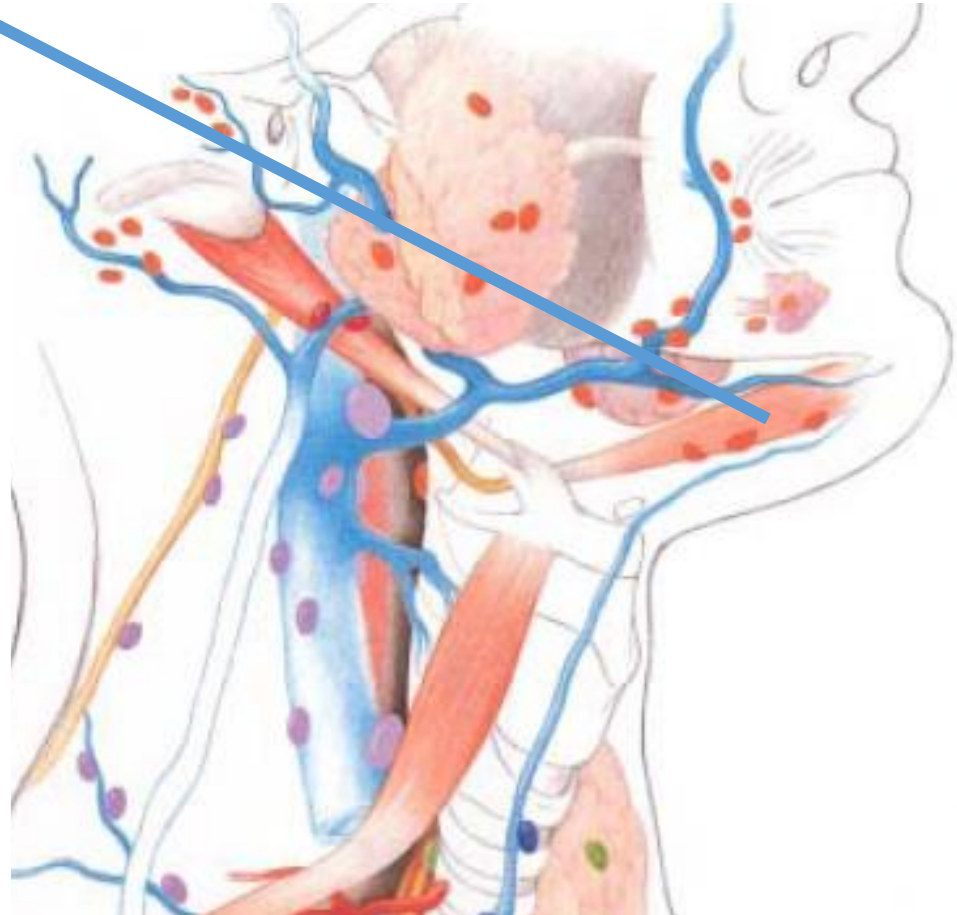




Medial-> **lateral edge of the ant belly of digastric** muscle

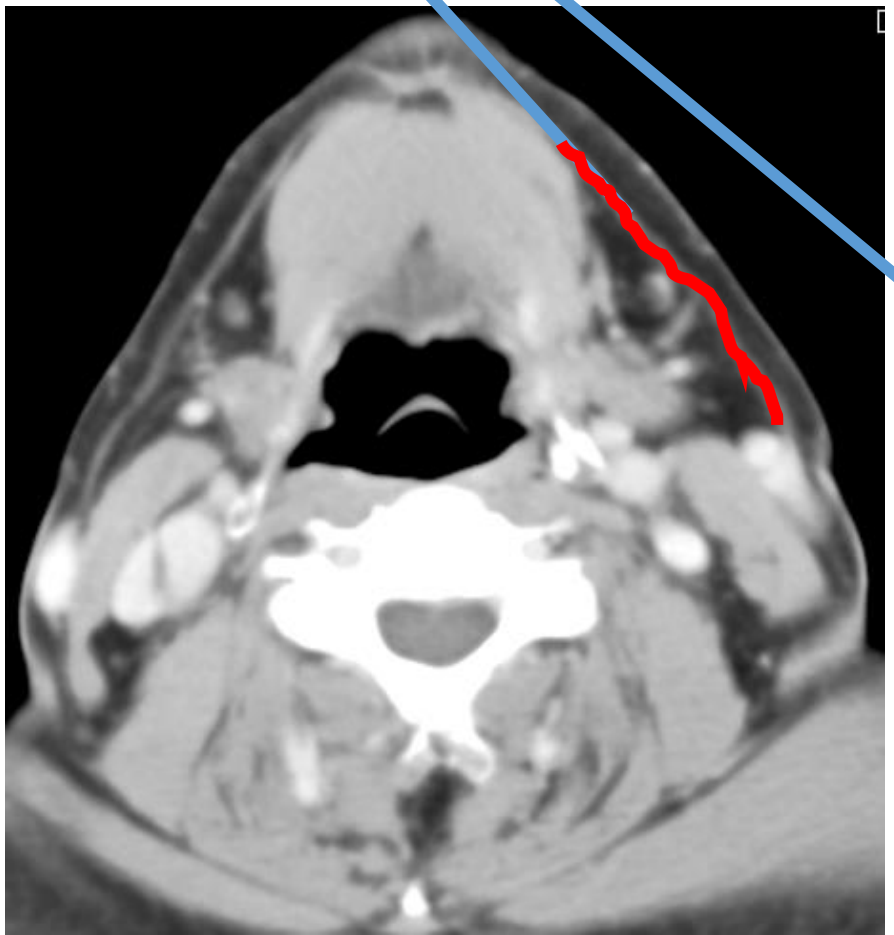
Level Ib

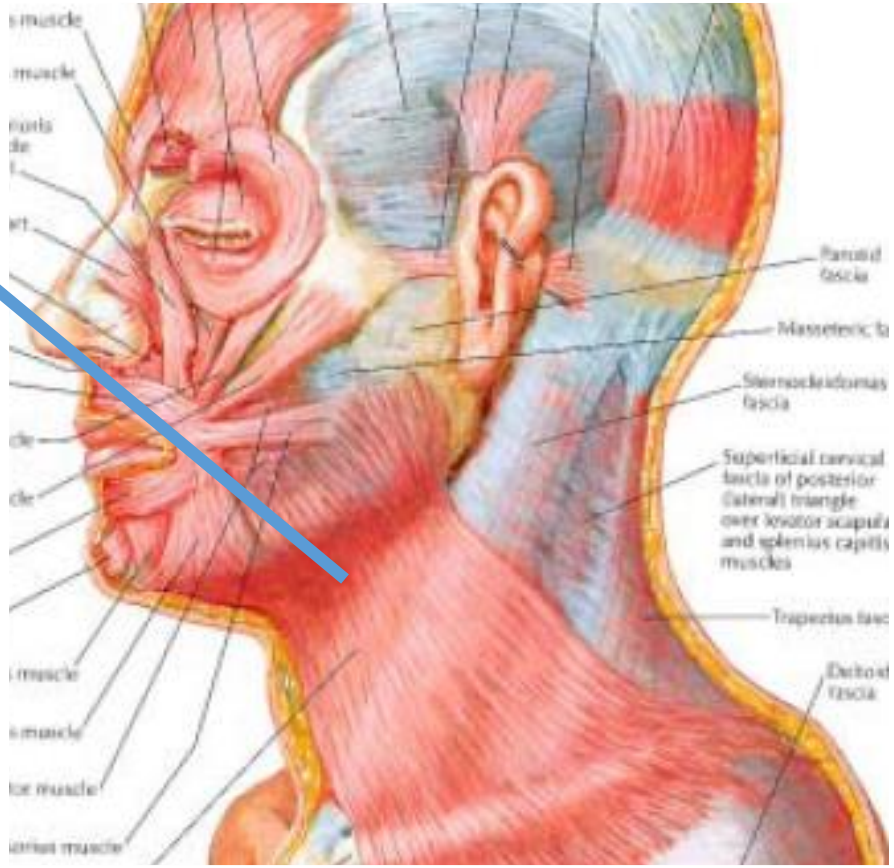




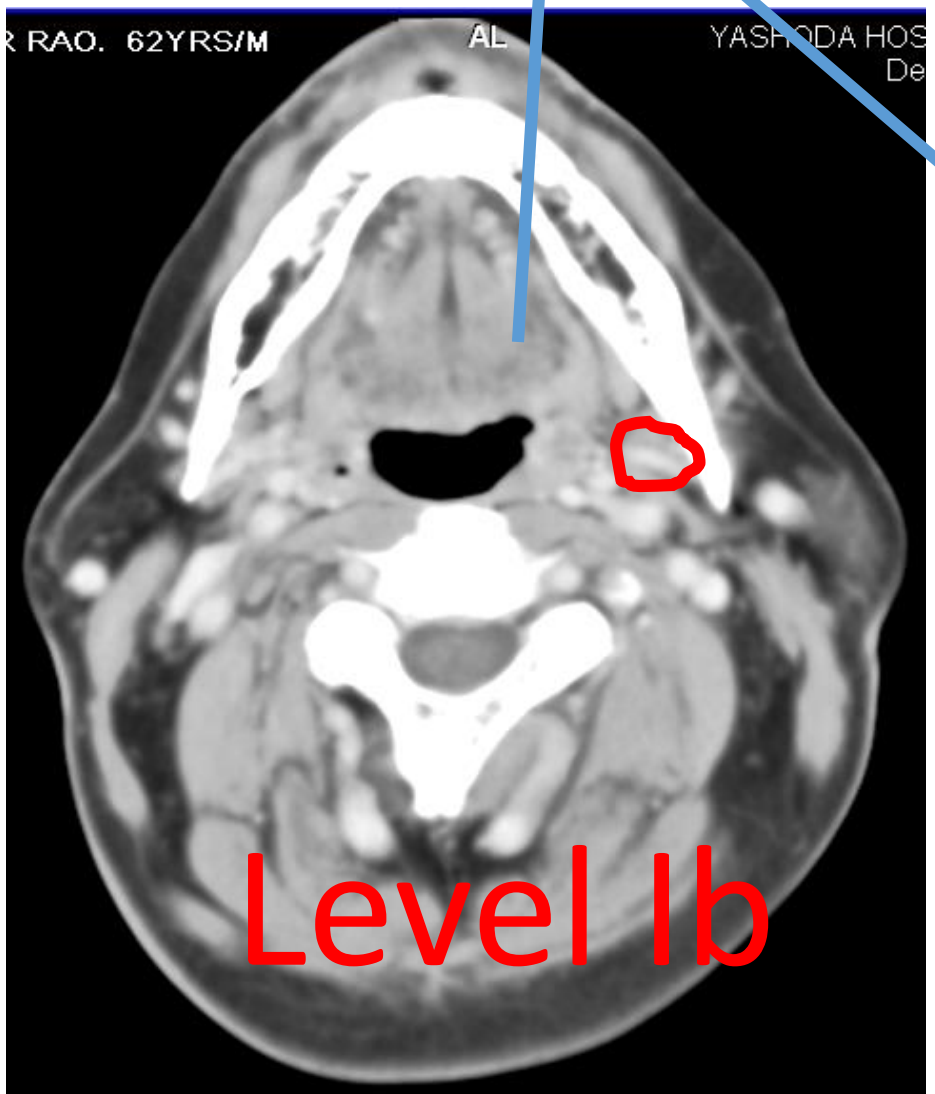
Lateral-> **Inner side of the mandible, Platysma and skin.**

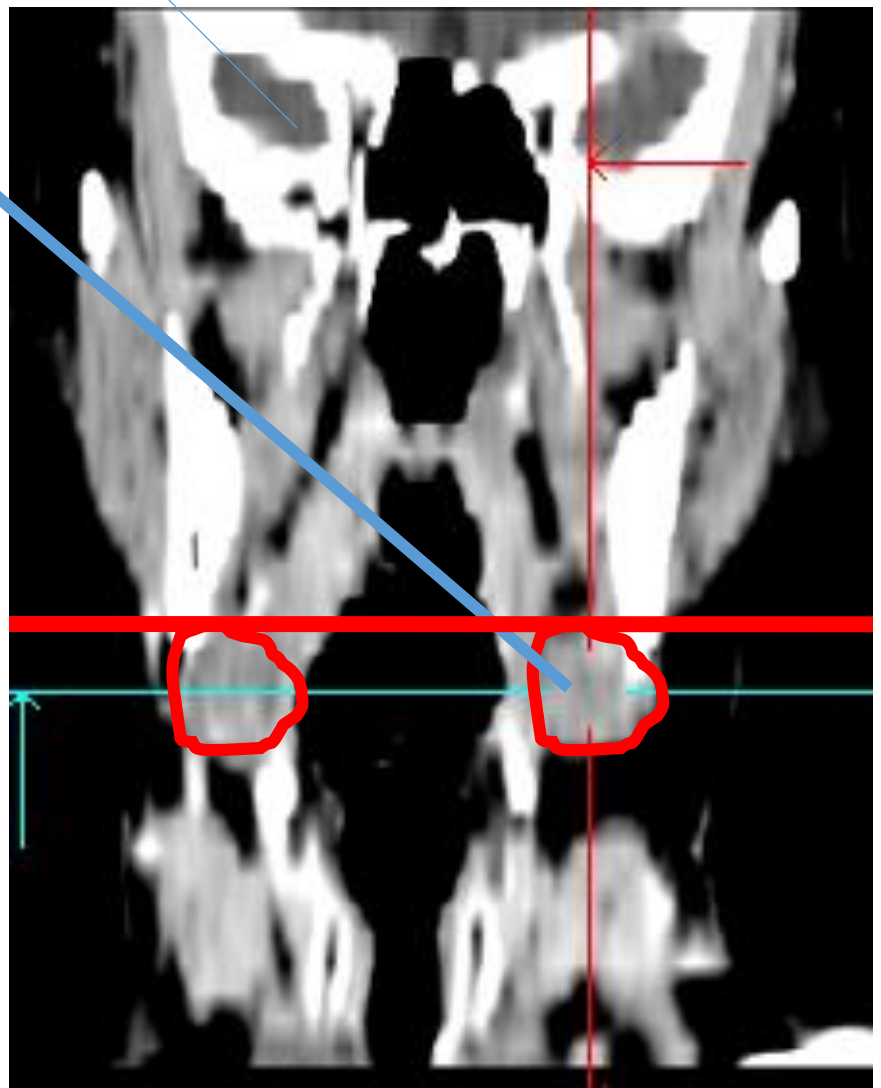
Level Ib





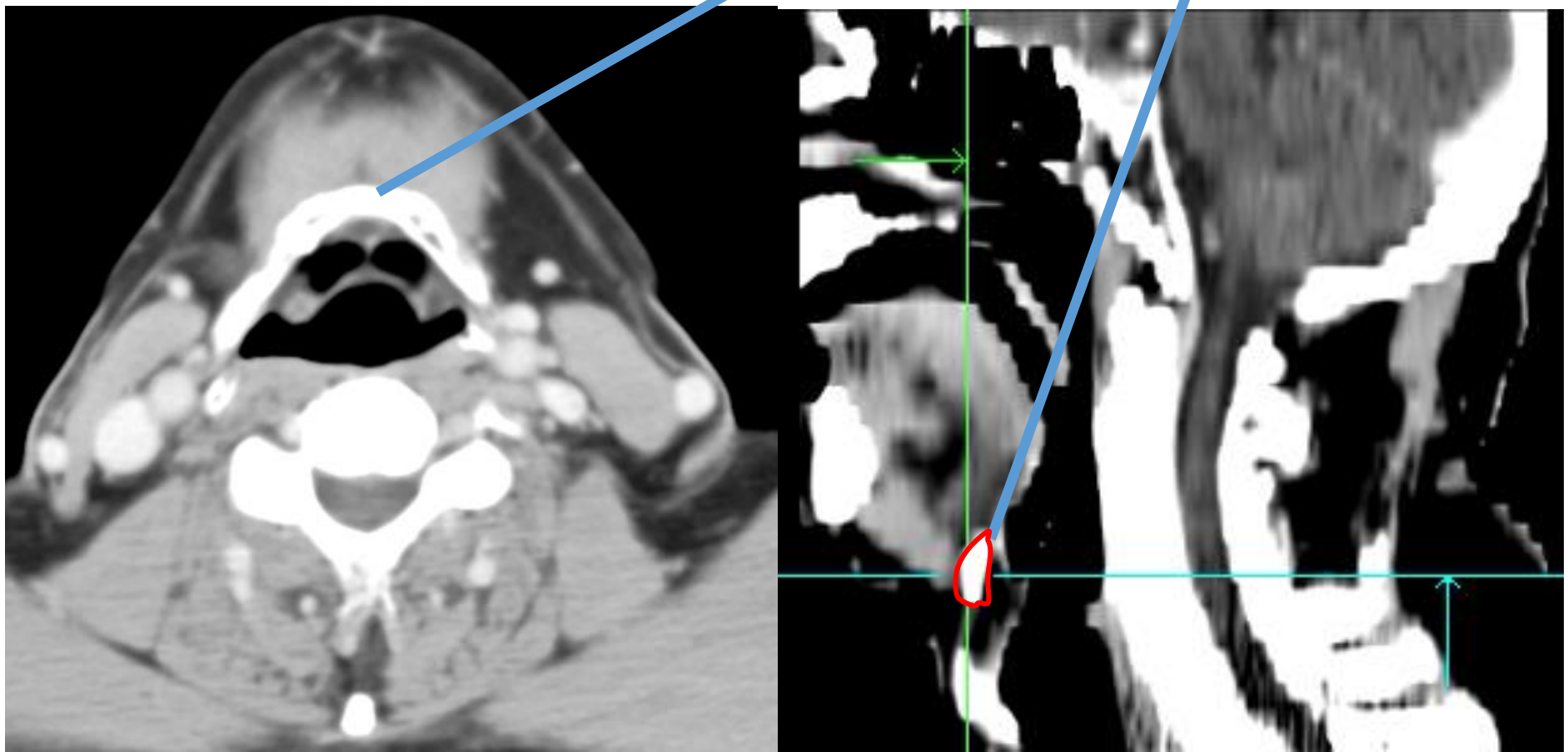
Cranial-> **Mylohyoid muscle and cranial edge of the submandibular gland.**

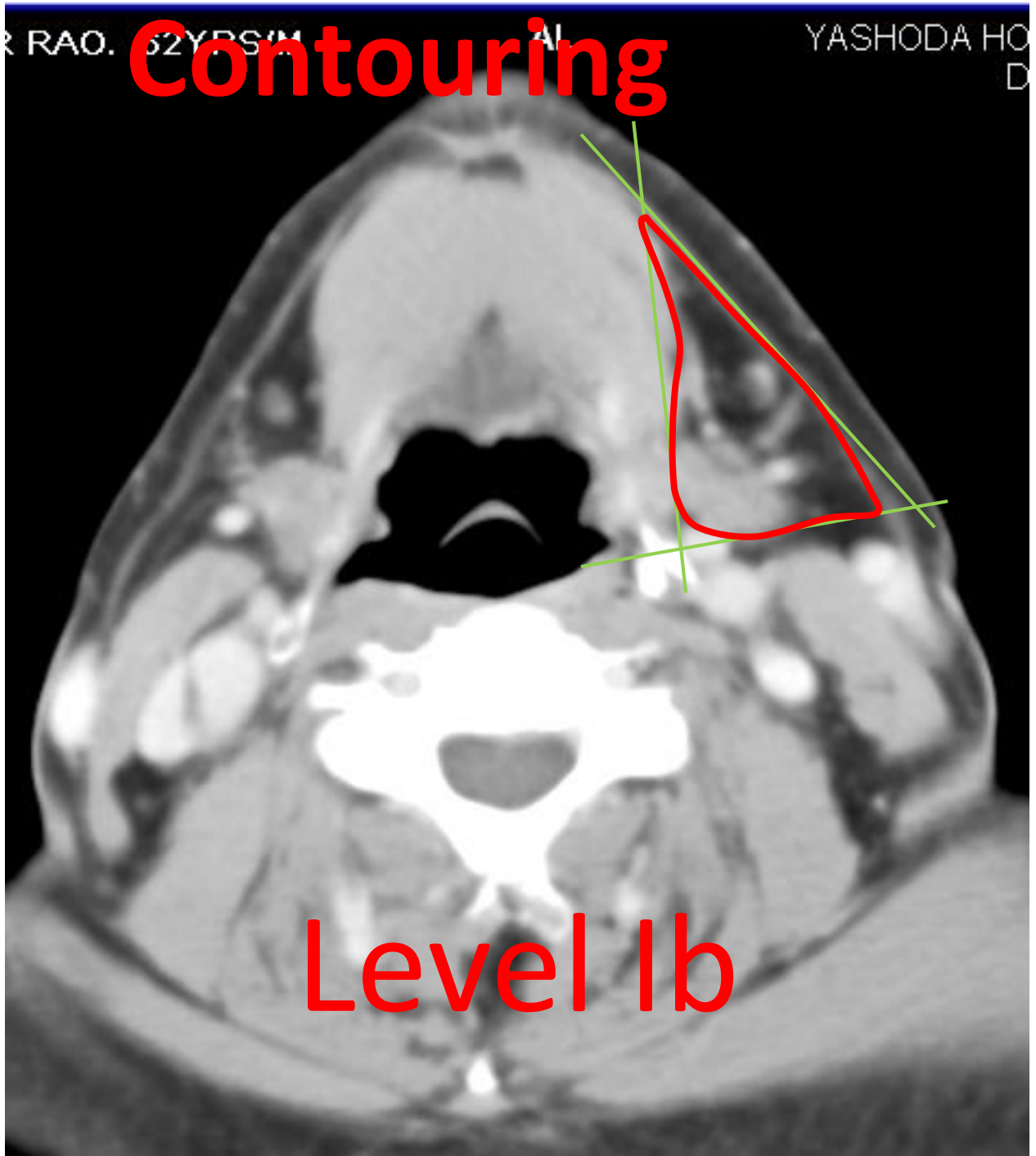




Caudal-> **Plane crossing the central part of Hyoid bone**

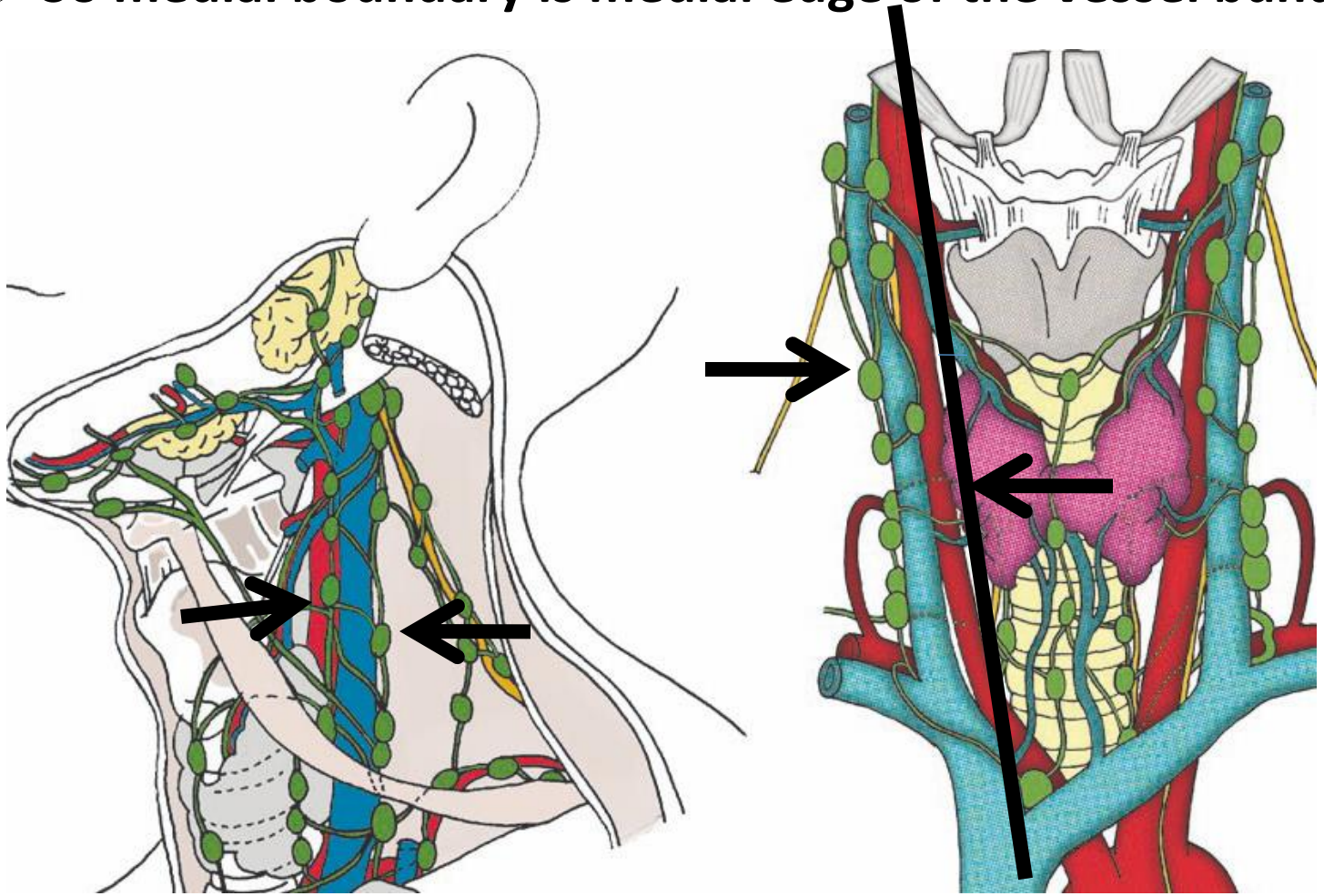
Level Ib




Contouring
Level Ib

Jugular nodes(Level II-IV)

- **Most of the jugular nodes(lev. II-IV) present ant., post., and lateral to the IJV.**
- **No nodes on medial to IJV**
- **So medial boundary is medial edge of the vessel bundle.**

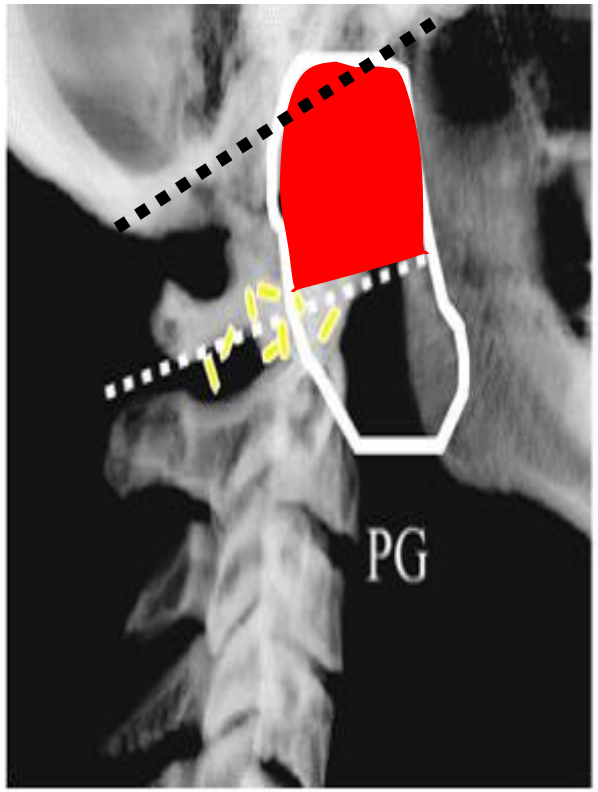


Level II

Cranial Boundry

- **Cranial limit for level II was defined by surgeons at insertion of post belly of digastric muscle at mastoid.**
- **But this point may not be identifiable on CT.**
- **Surgeons were asked to put the clips at the upper level of dissection for level II nodes in node negative neck.**

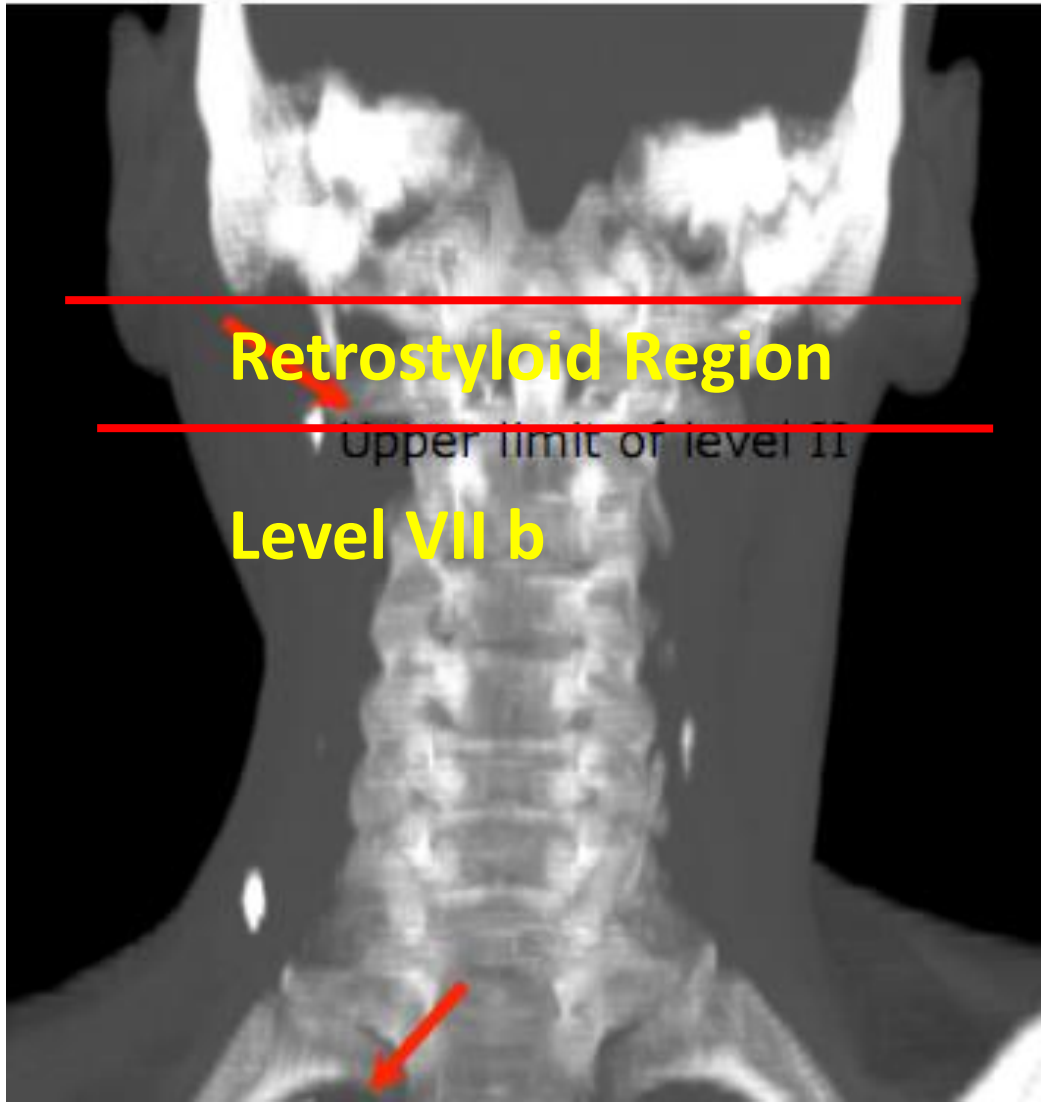
How consensus was made for cranial border for level II Nodes?



Parotid projection so if cranial limit is taken at base of skull then more parotid will be irradiated.

- Clips cluster around caudal border of transverse process of vertebra C1.
- So cranial border of level II is taken at caudal edge of transverse process of C1.

Level II



- **Usually the cranial limit of level II is caudal border of transverse process of C1 vertebrae.**
- **But few nodes also present superior to this up to base of skull.**
- **This region cranial to cranial limit of Level II is called Retro Styloid region.**

When to treat Retro Styloid Region

- **Ca Nasopharynx.**

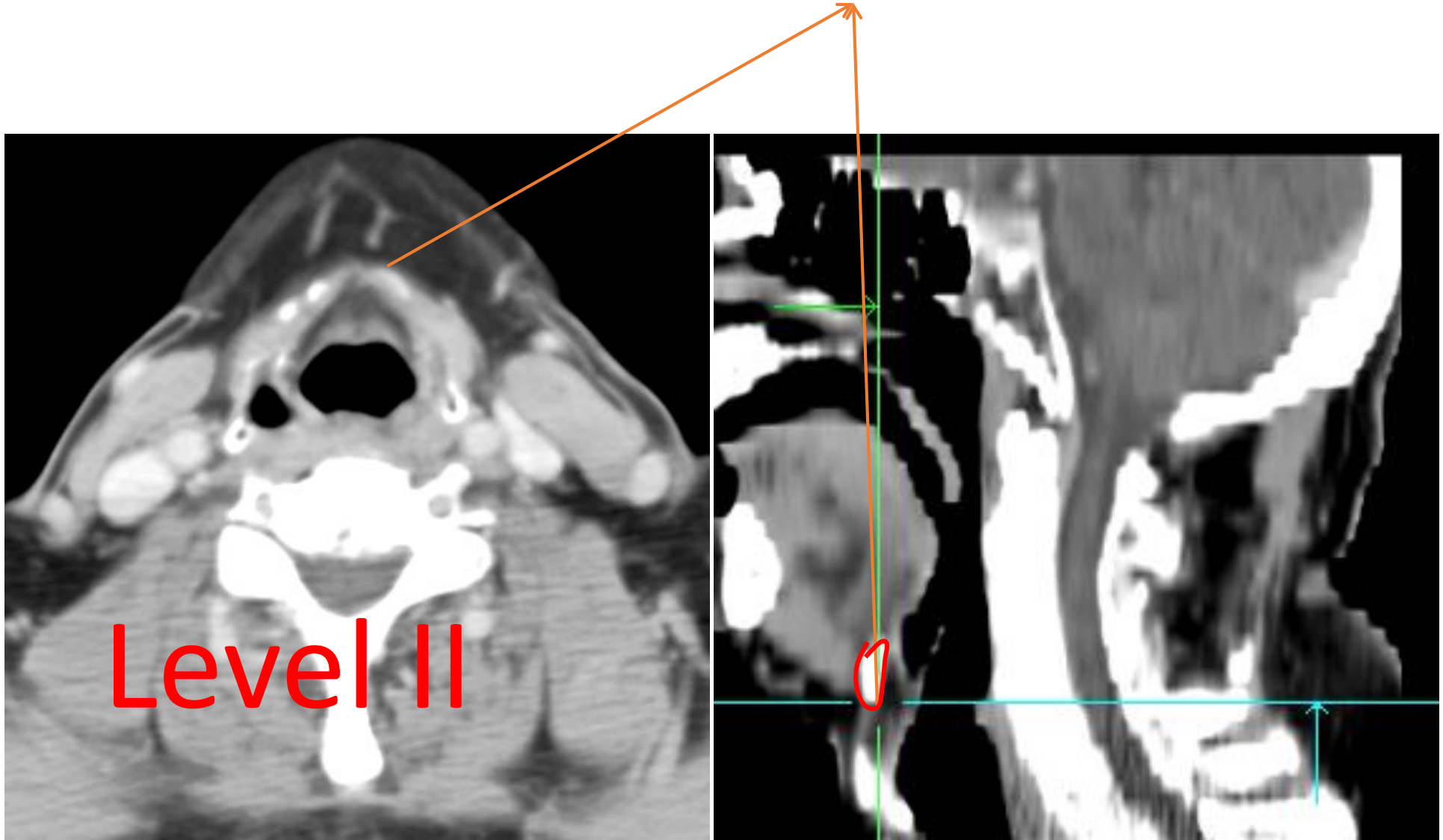
Bilateral

- **In +ve level II node**

Ipsilateral

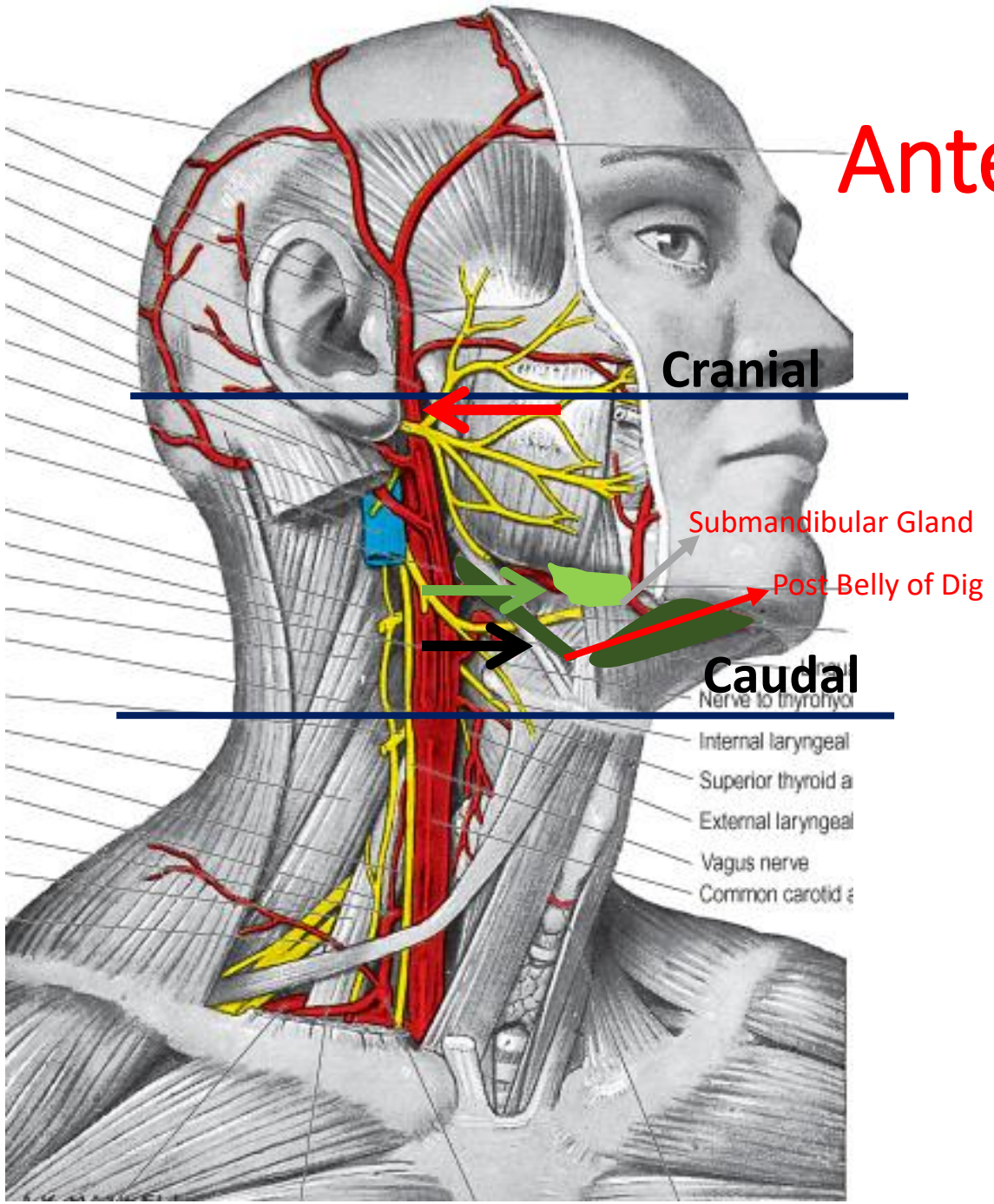
Caudal-> Carotid Bifurcation (Surgical Boundry)

caudal edge of body of the hyoid bone.



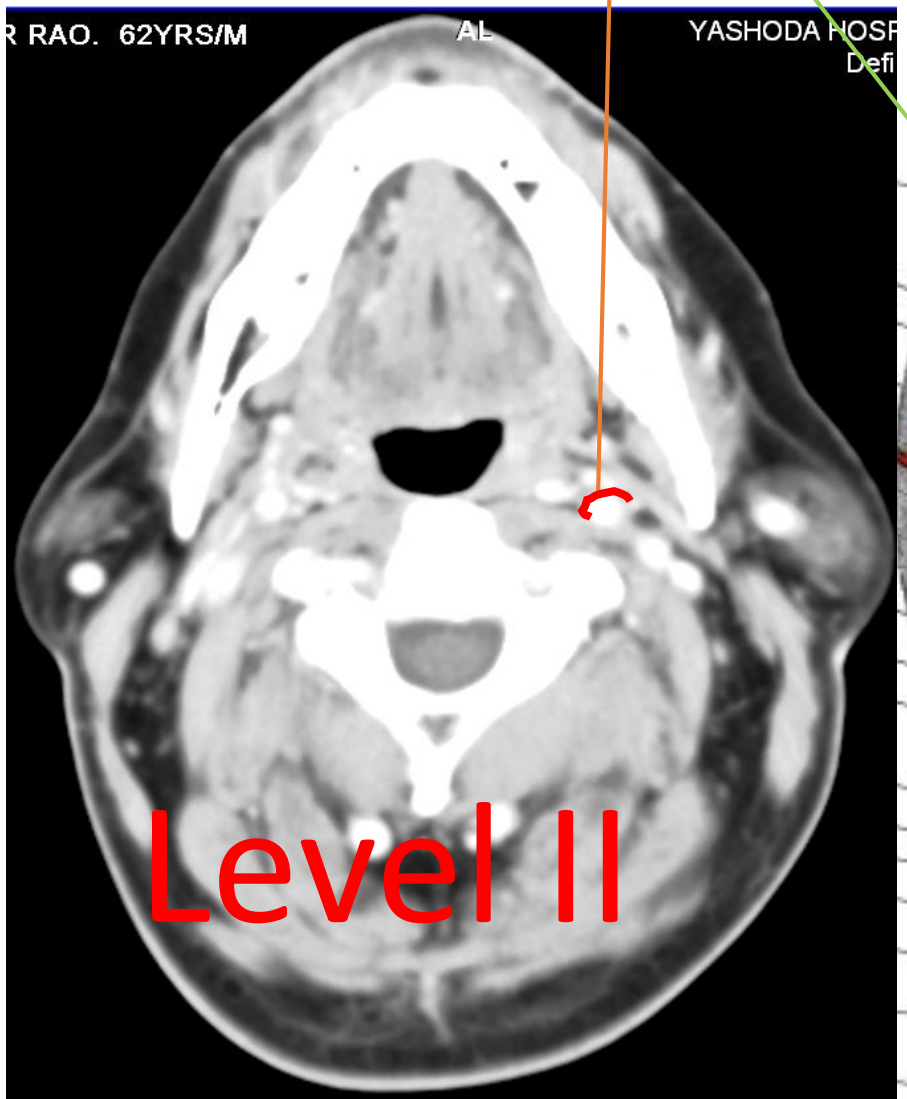
Level II

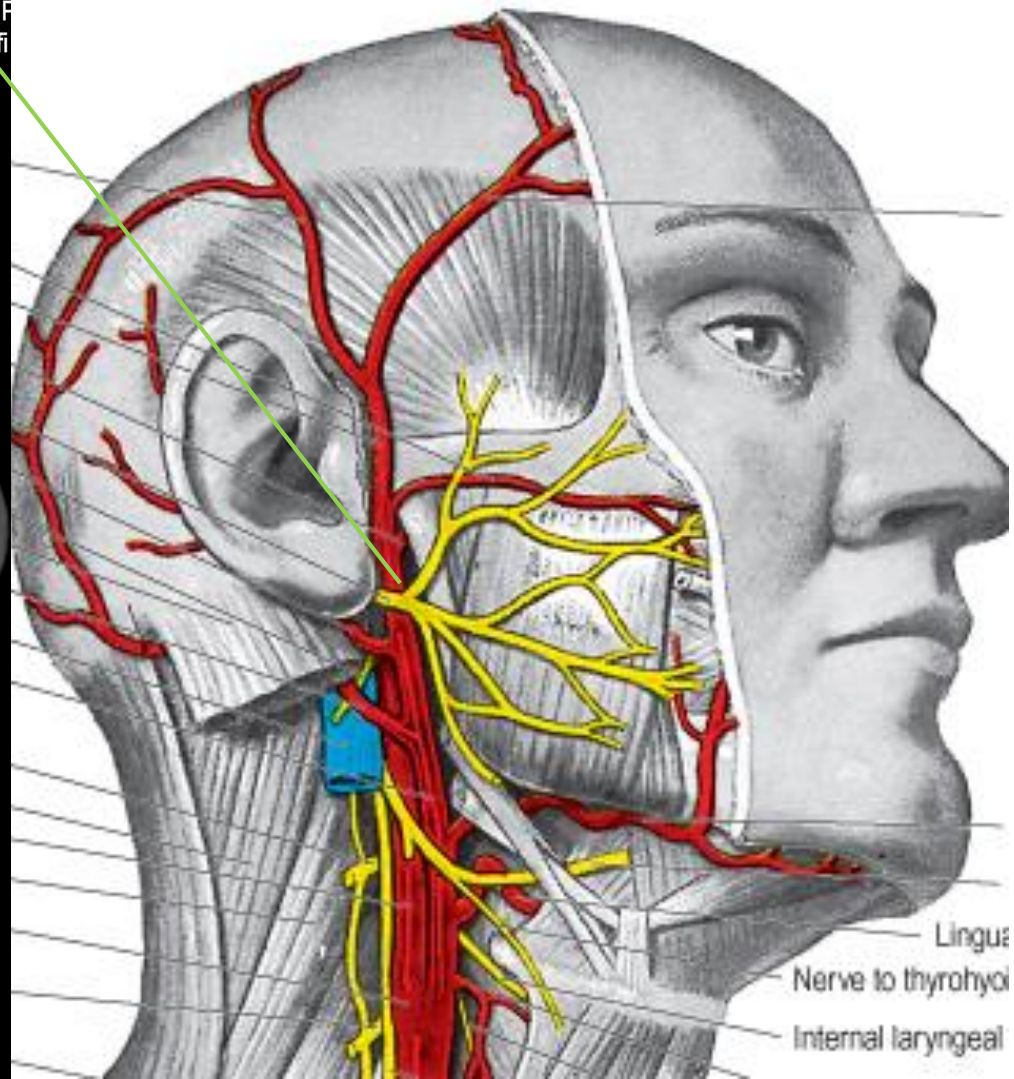
Anterior Relation



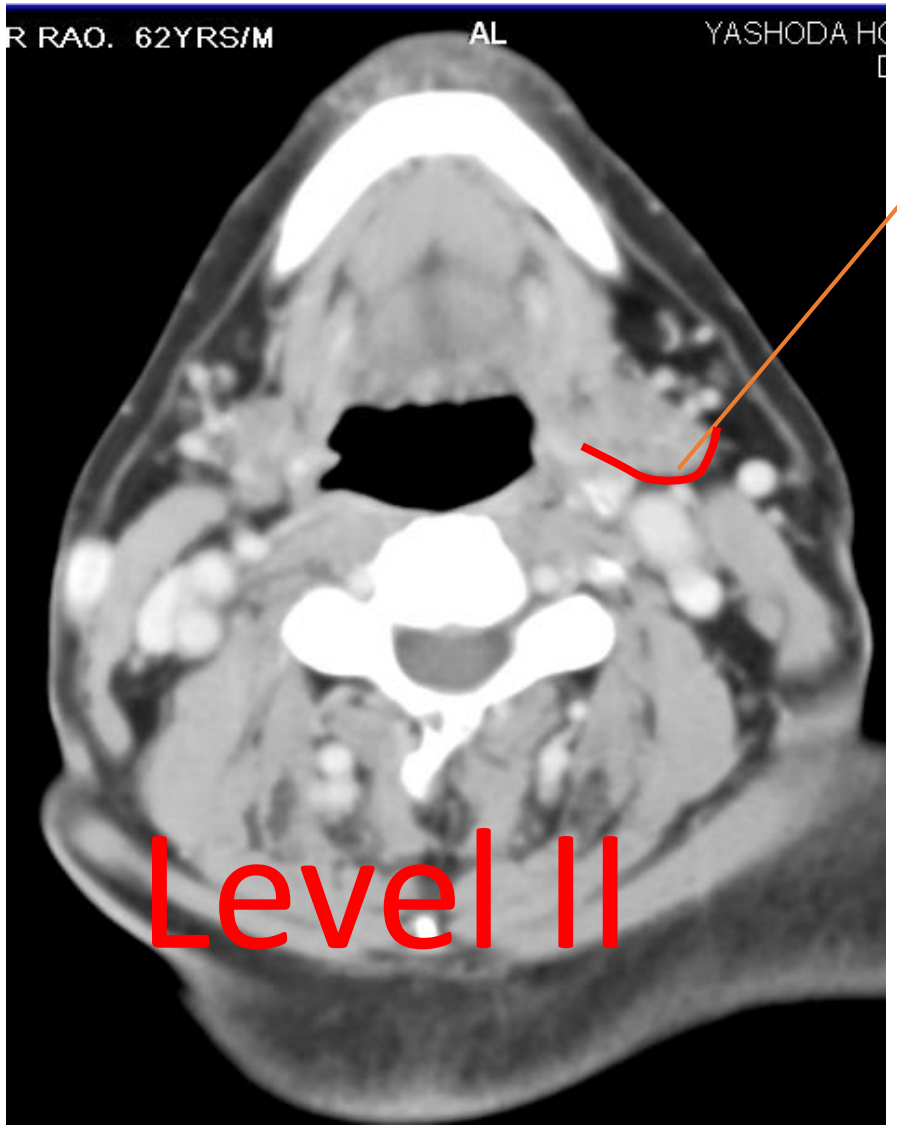
- **the anterior edge of the carotid artery**
- **posterior edge of the submandibular gland,**
- **the posterior belly of the digastric muscle,**

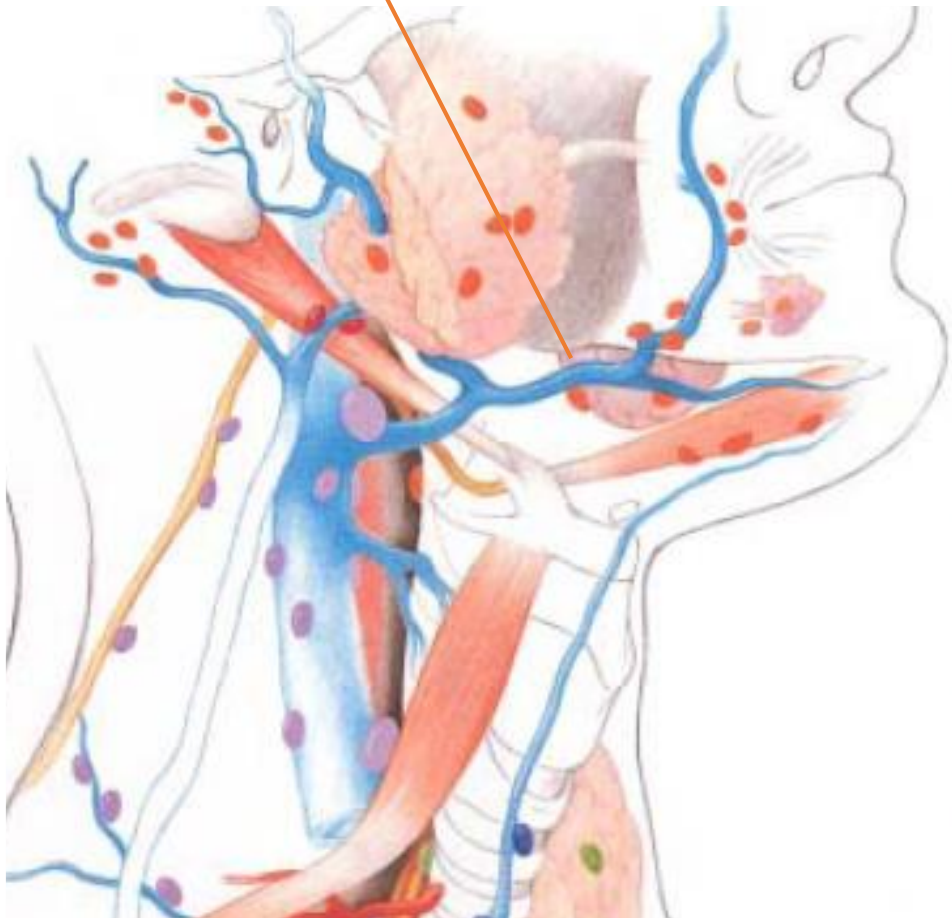
Anterior-> Anterior edge of the carotid artery



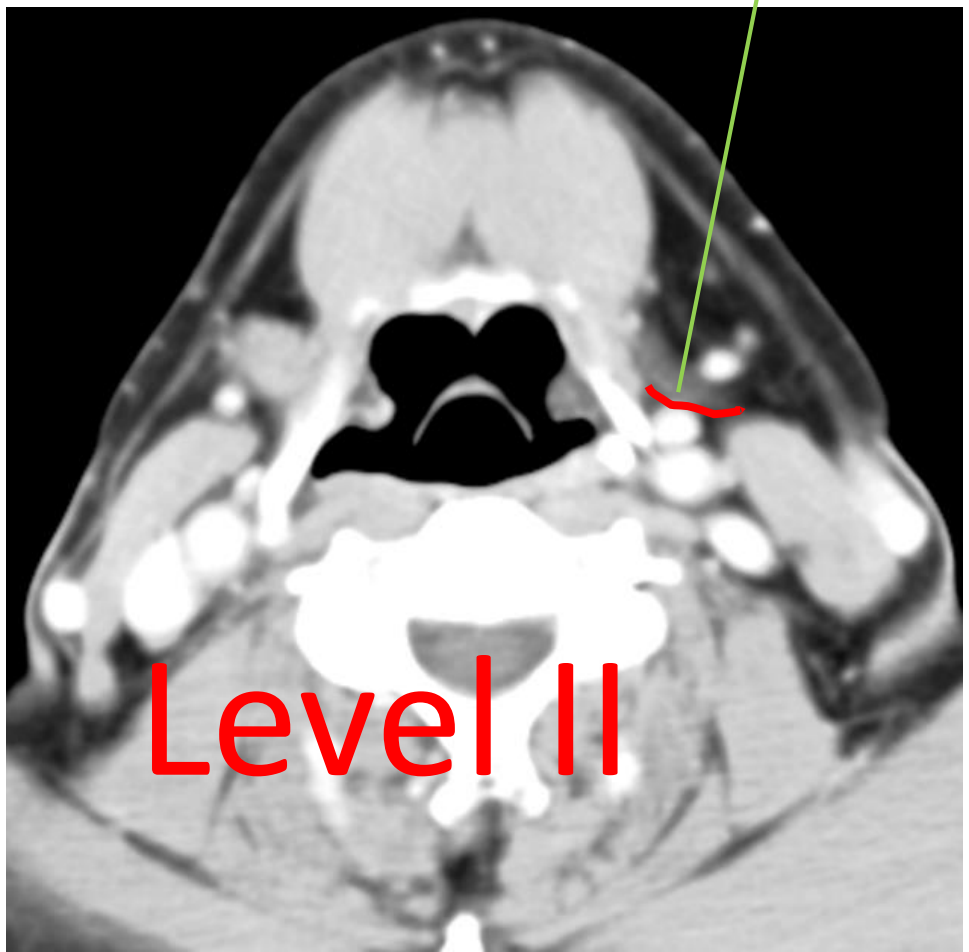


Anterior->Posterior edge of the submandibular gland,

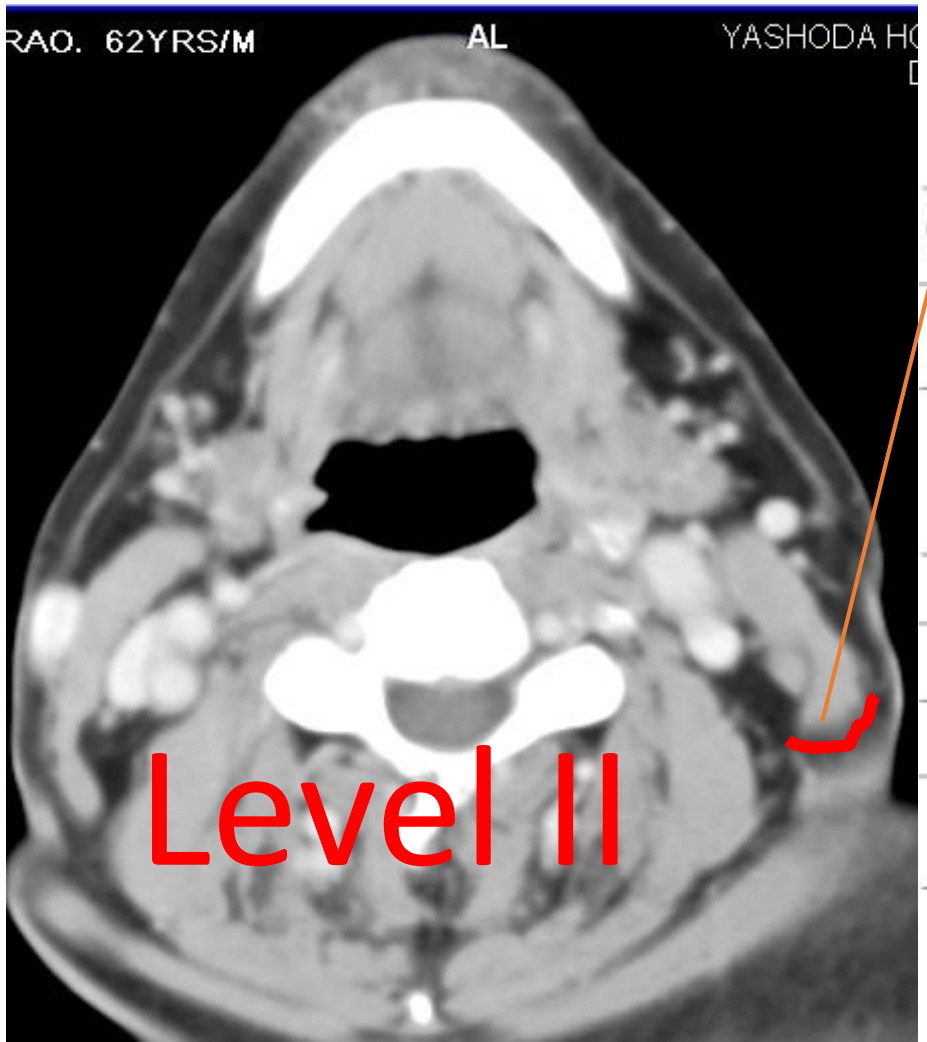


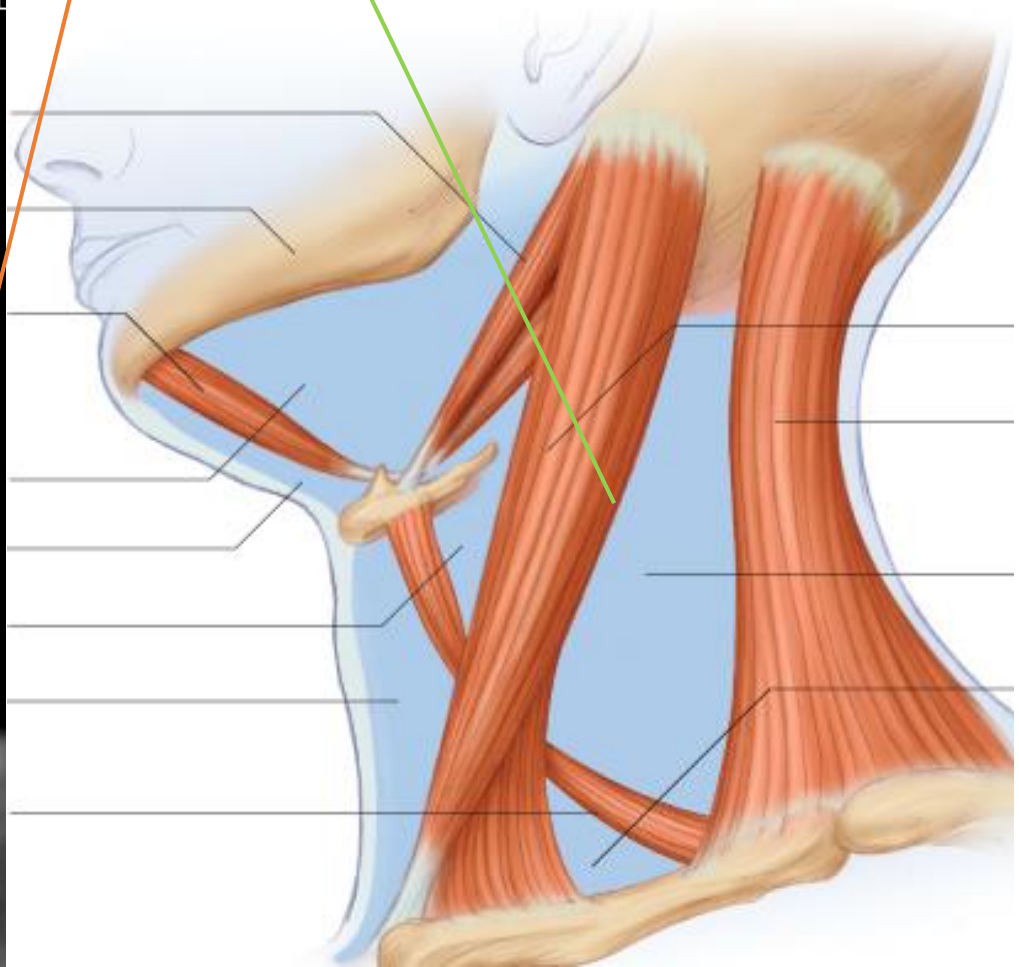


Anterior-> posterior belly of the digastric muscle,

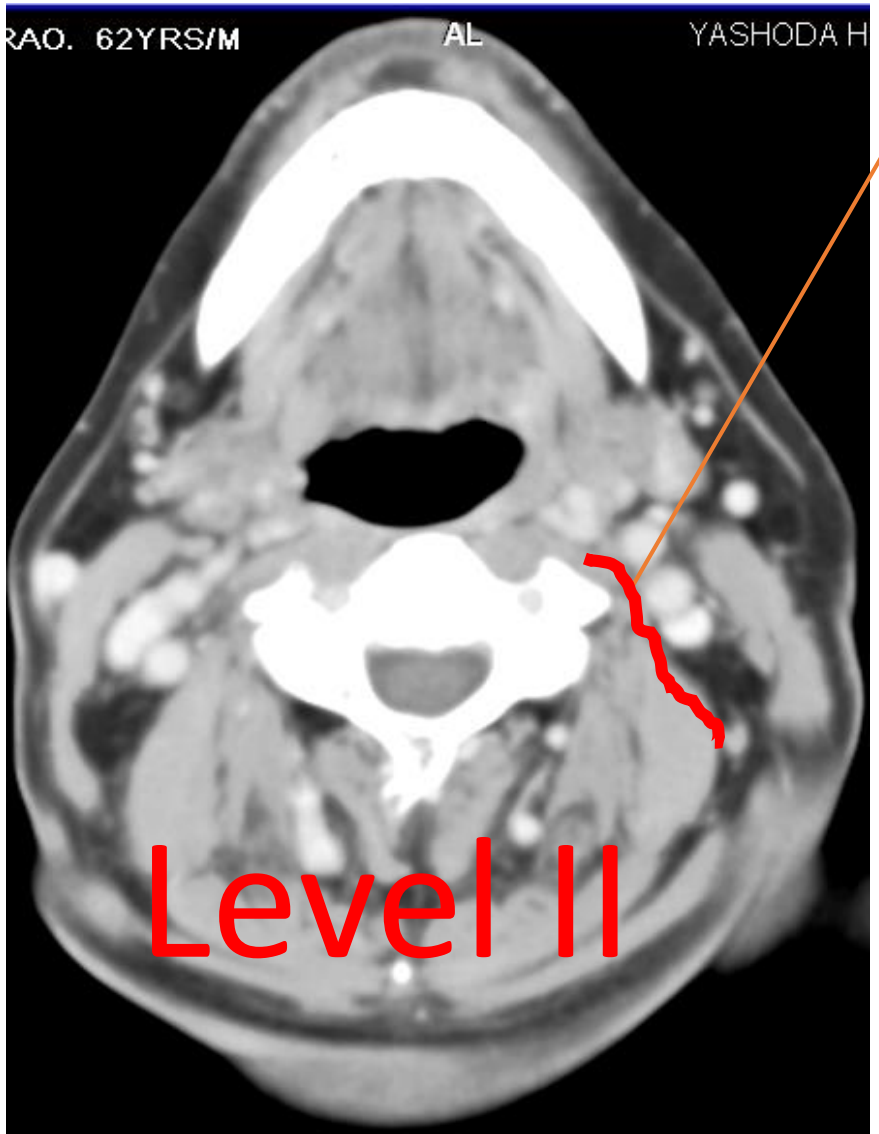


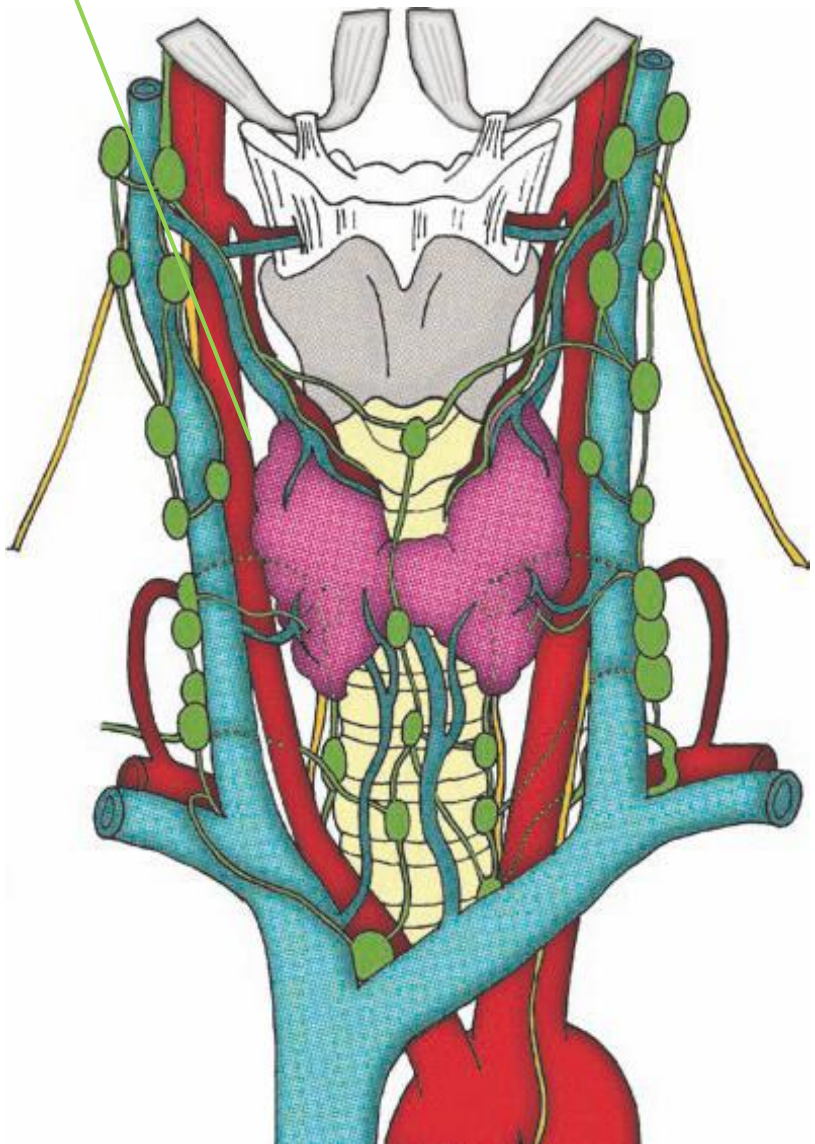
Posterior-> Posterior edge of the sternocleidomastoid (SCM) muscle,



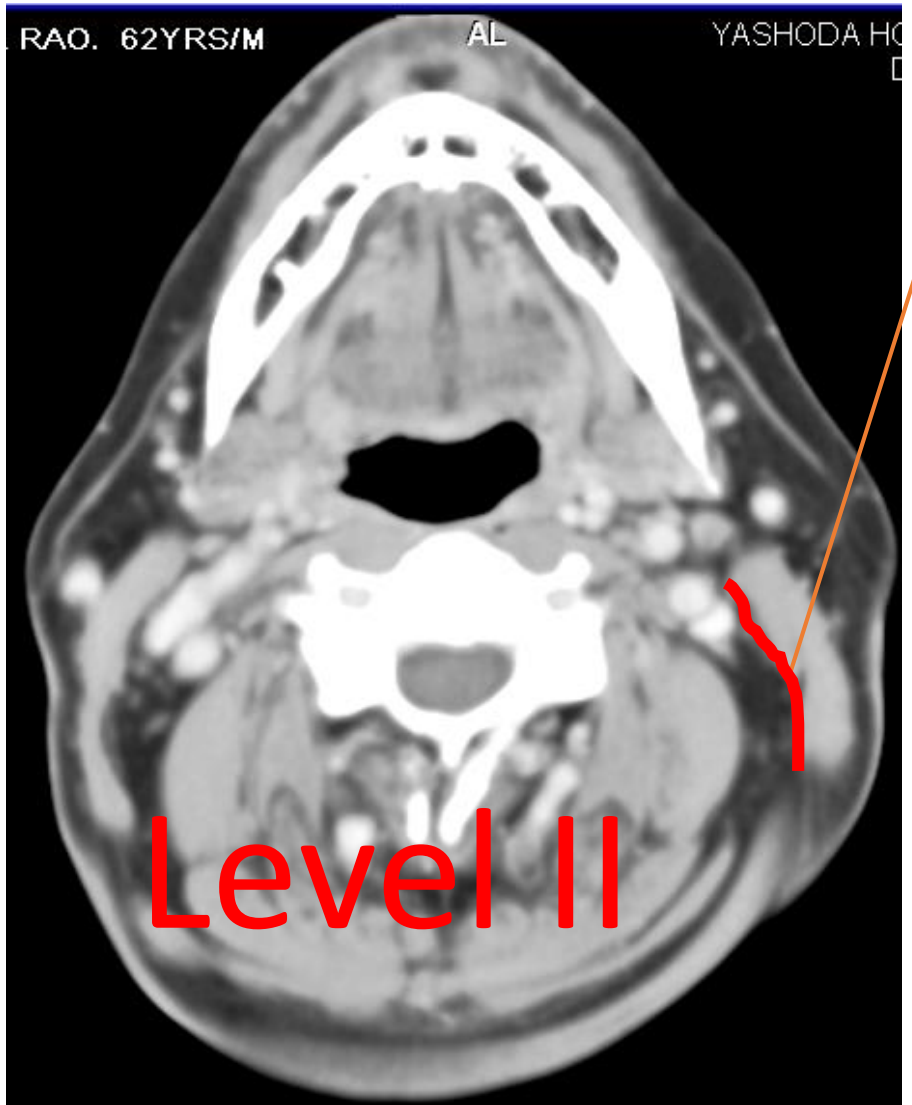


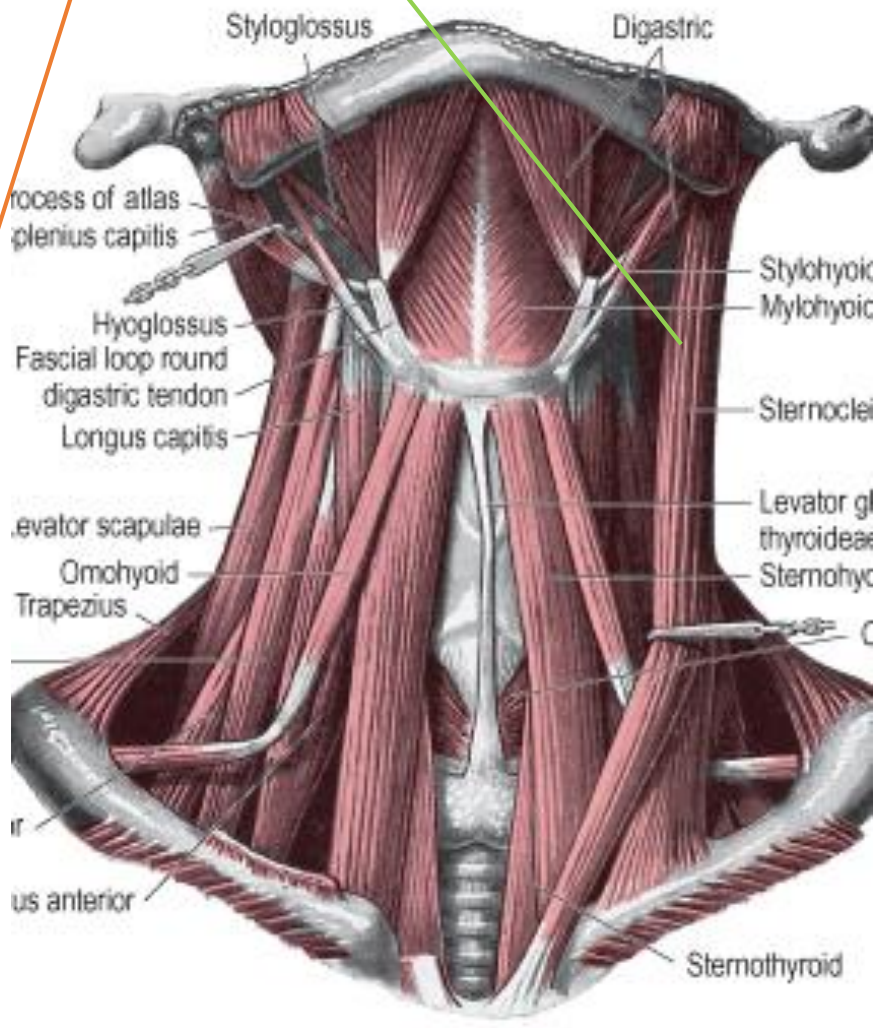
Medial-> **Medial edge of the carotid artery and the paraspinal muscles (levator scapulae and splenius capitis)**

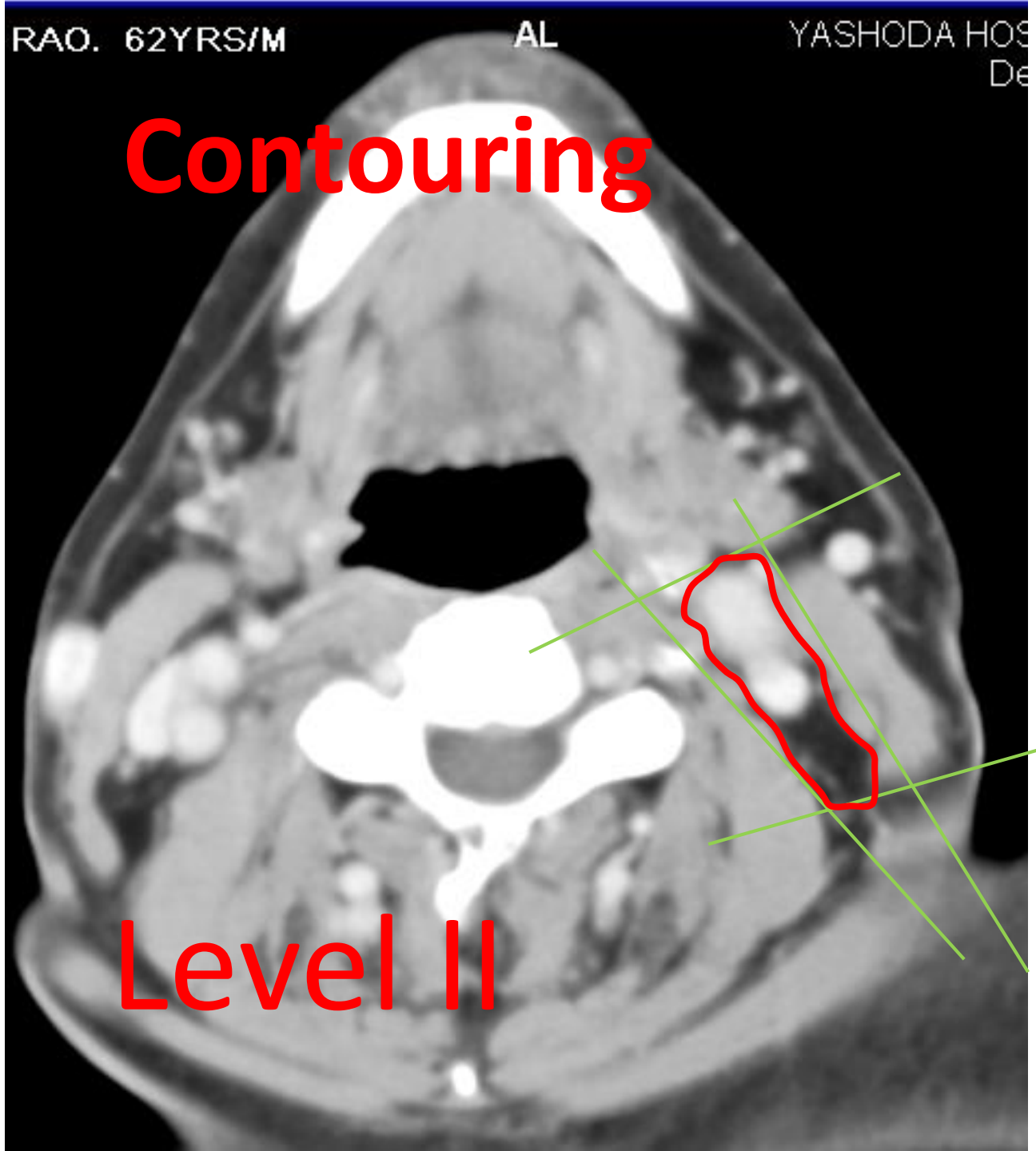




Lateral-> Medial edge of the SCM



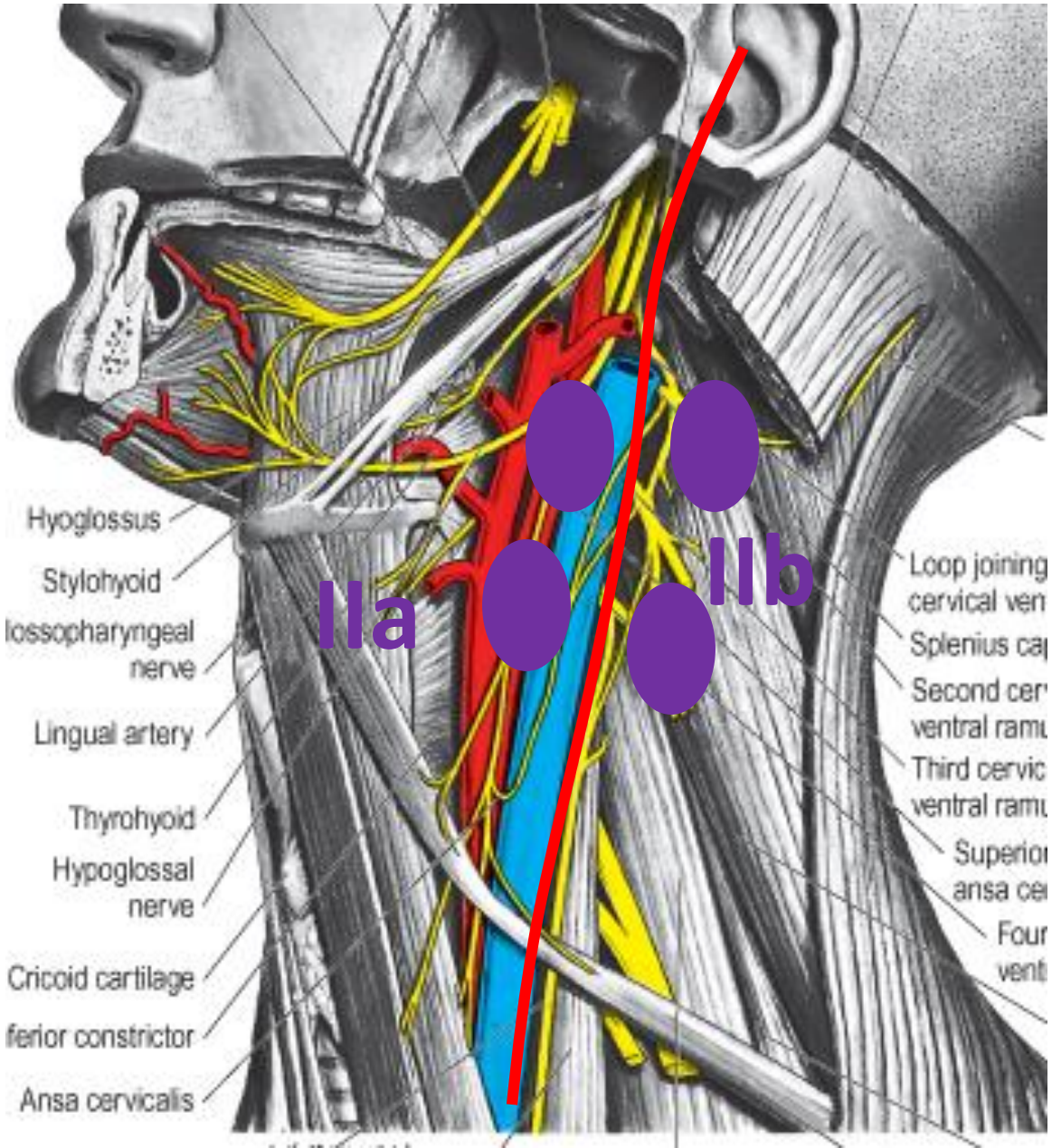



RAO. 62YRS/M
AL
YASHODA HOS
De
Contouring
Level II

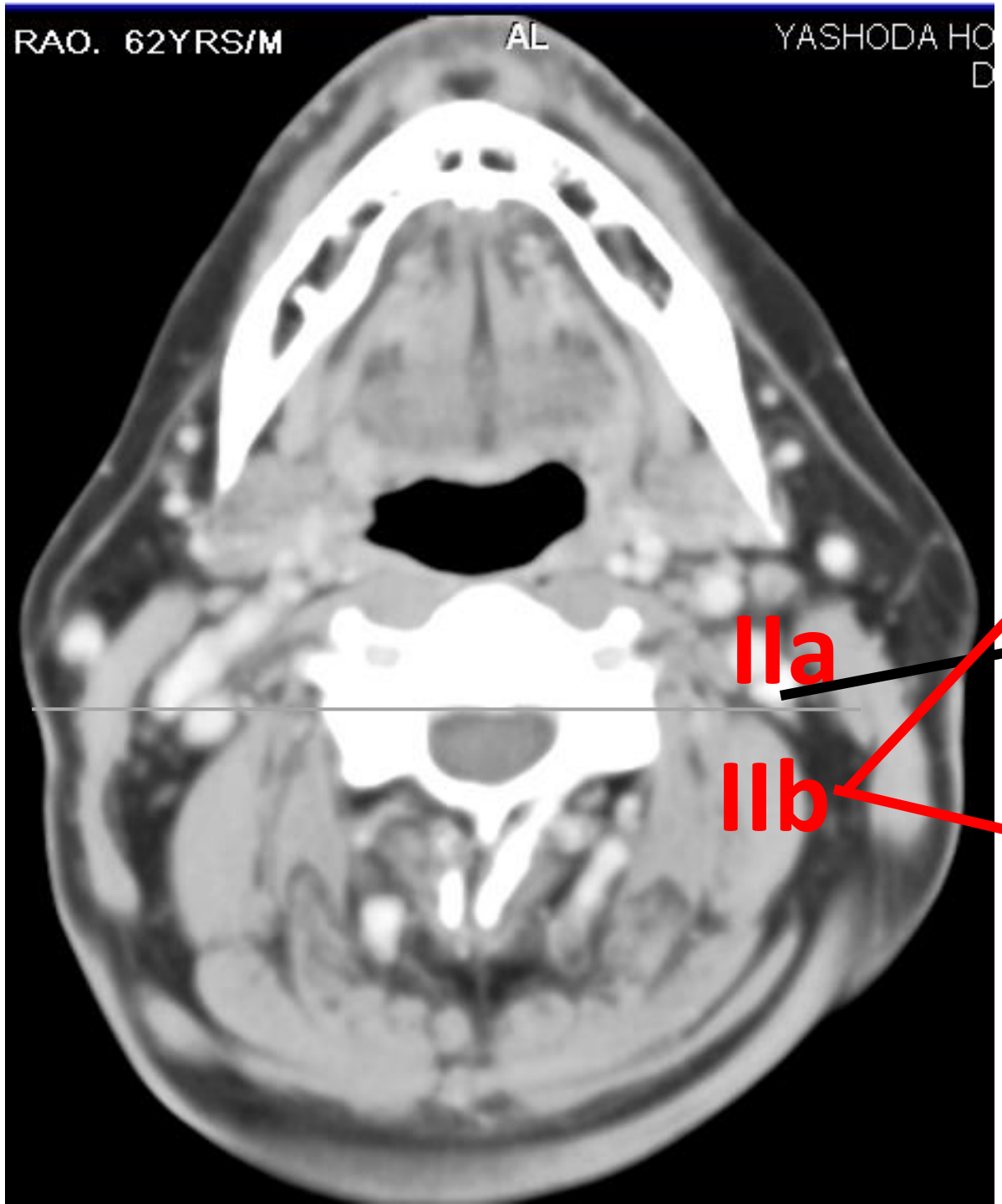
Primary for II

- **Nasal cavity.**
- **Oral cavity.**
- **Pharynx**
  - ***Oropharynx.***
  - ***Hypopharynx.***
  - ***Nasopharynx,***
- **Larynx.**
- **Major salivary glands.**

Sub division of Level II



- Level II is further subdivided into two compartments.
  - IIa
  - IIb
- Surgeons demarcate between the two by spinal accessory nerve (SAN).
- From a radiological point of view, the posterior edge of the IJV is taken as the boundary between levels IIa and IIb.



More frequently

- ***Oropharynx***
- ***Naso pharynx***

IJV

Less frequently

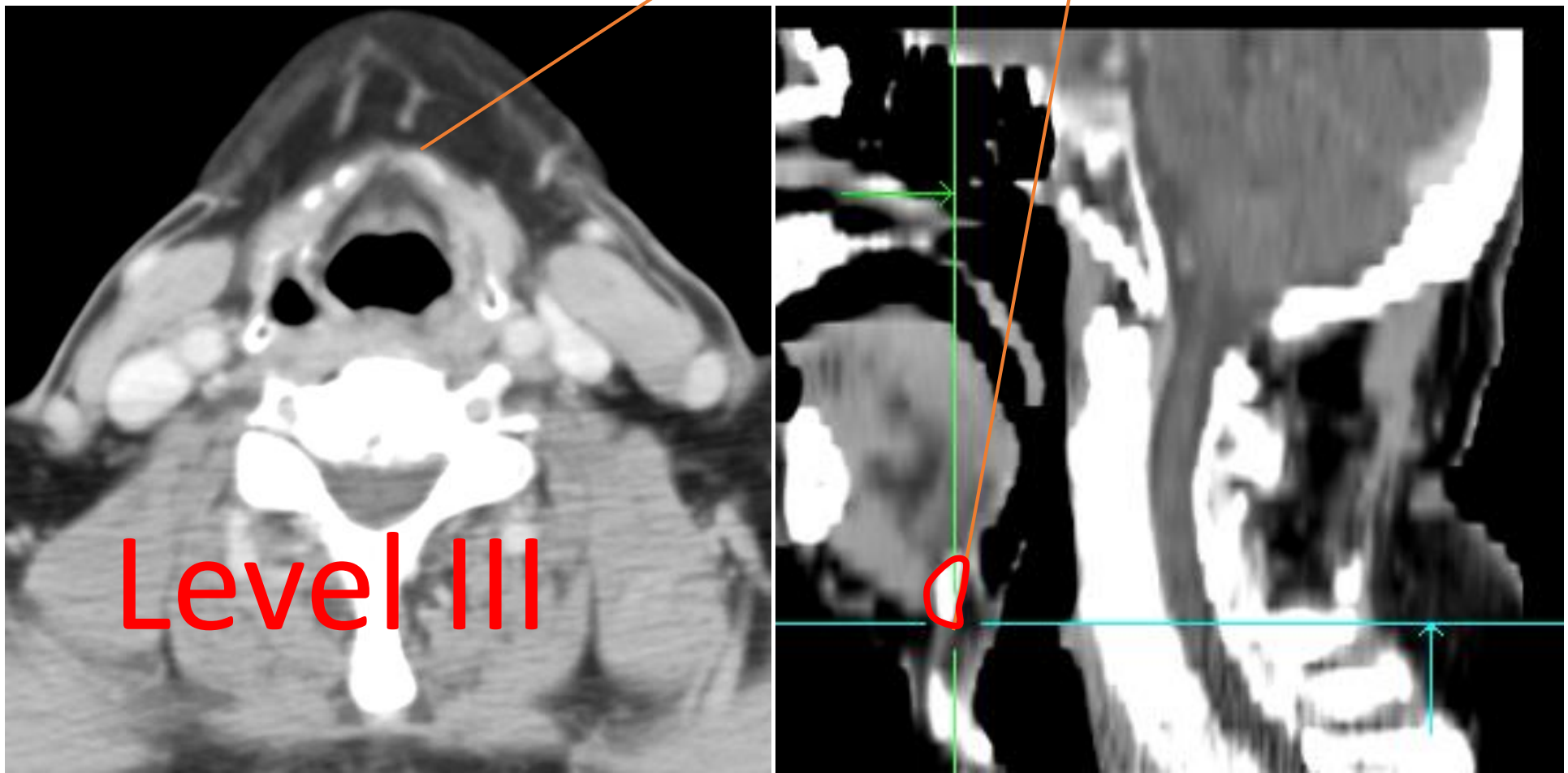
- ***Oral cavity***
- ***Larynx***
- ***hypopharynx***

Level III

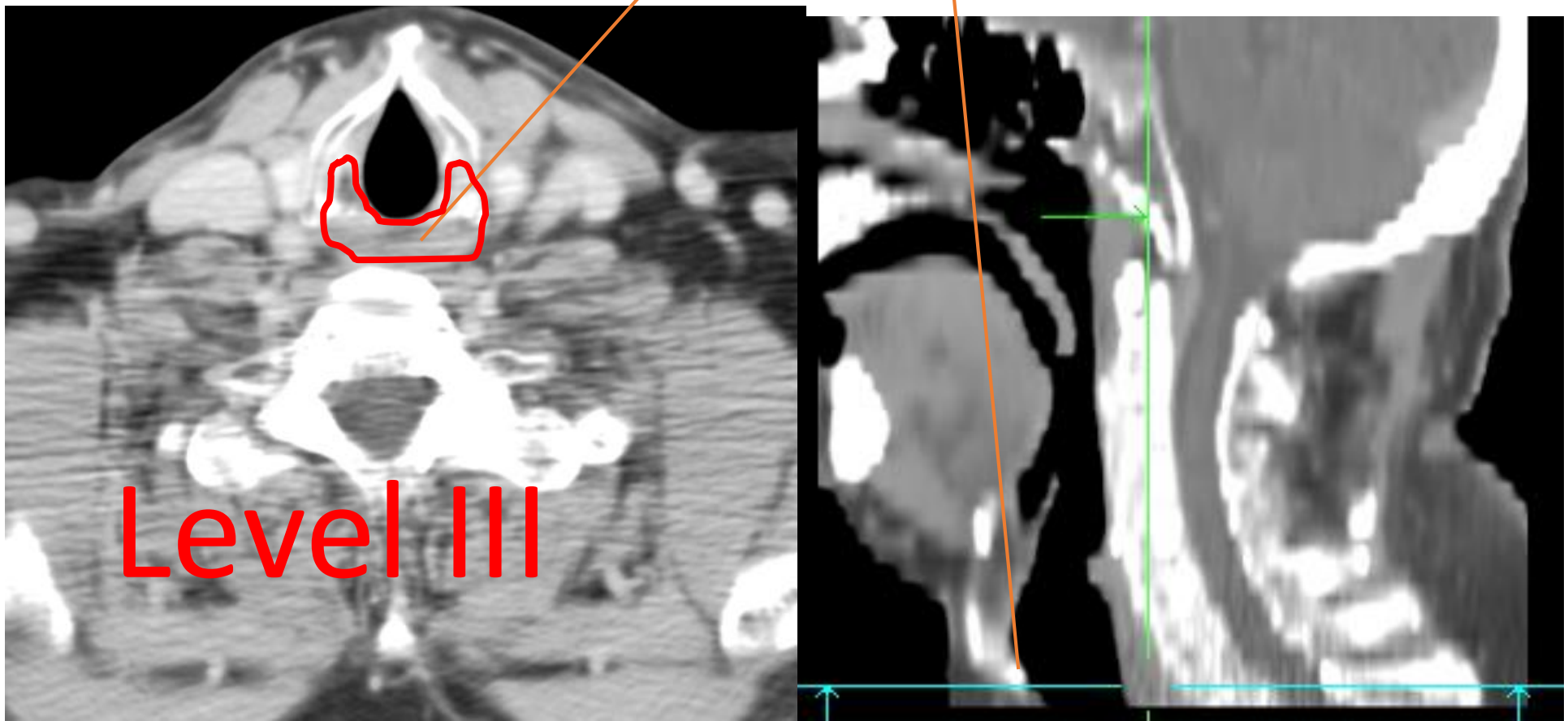
- **contains the middle jugular lymph nodes located around the middle third of the IJV.**
- **It is the caudal extension of level II**
- **Primary.**

Oral cavity.
Oropharynx.
Hypopharynx.
Nasopharynx,
Larynx.

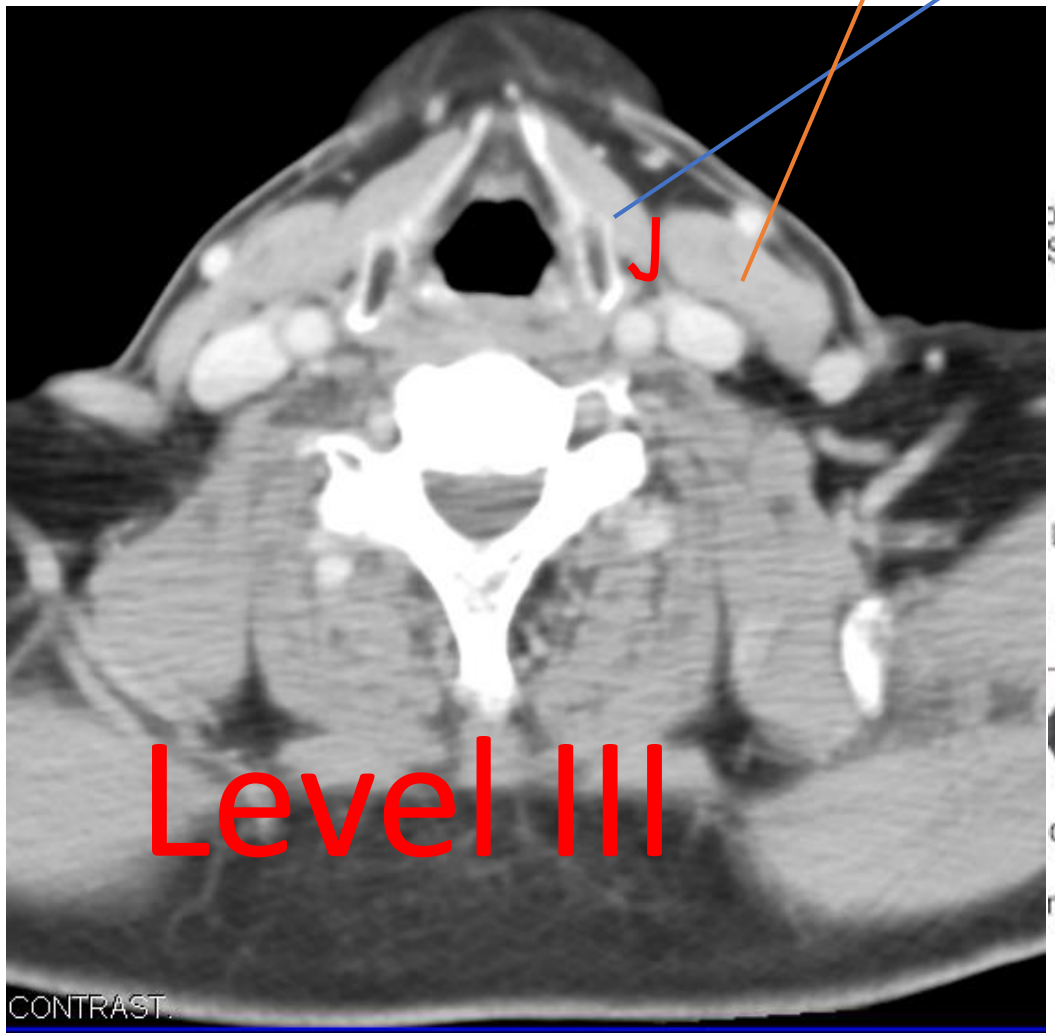
Cranial-> caudal edge of body of the hyoid bone.

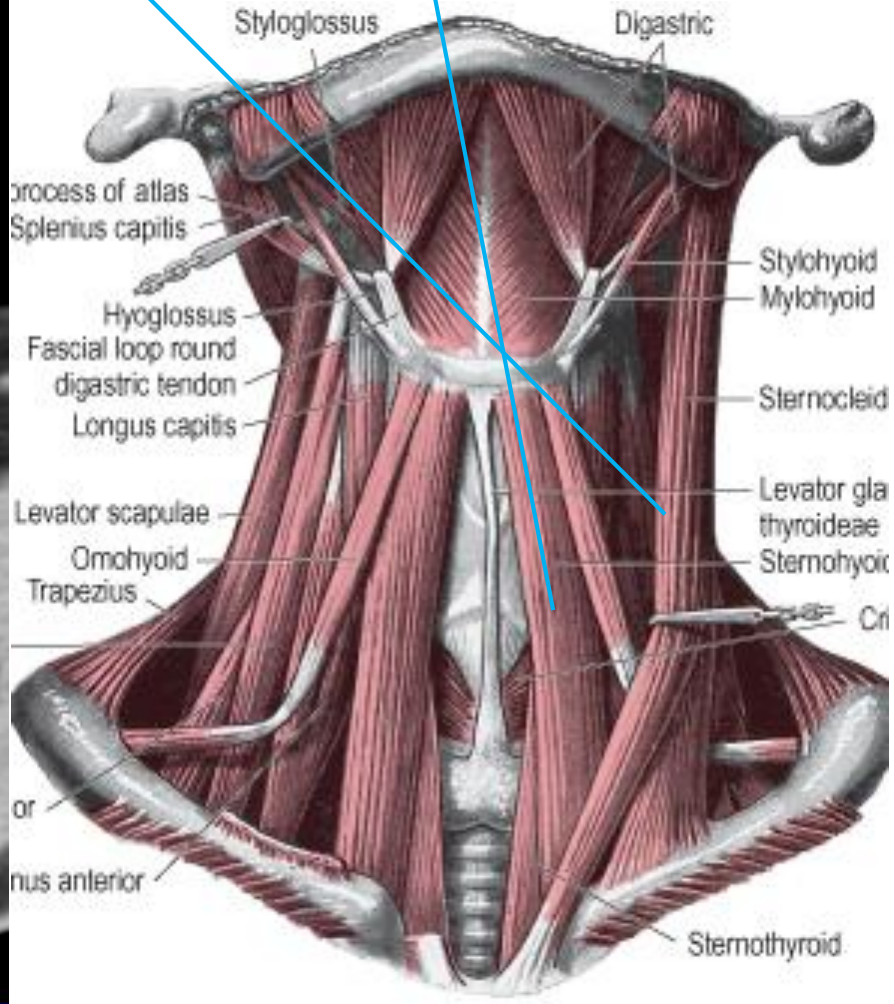


Caudal-> Caudal edge of the cricoid cartilage.

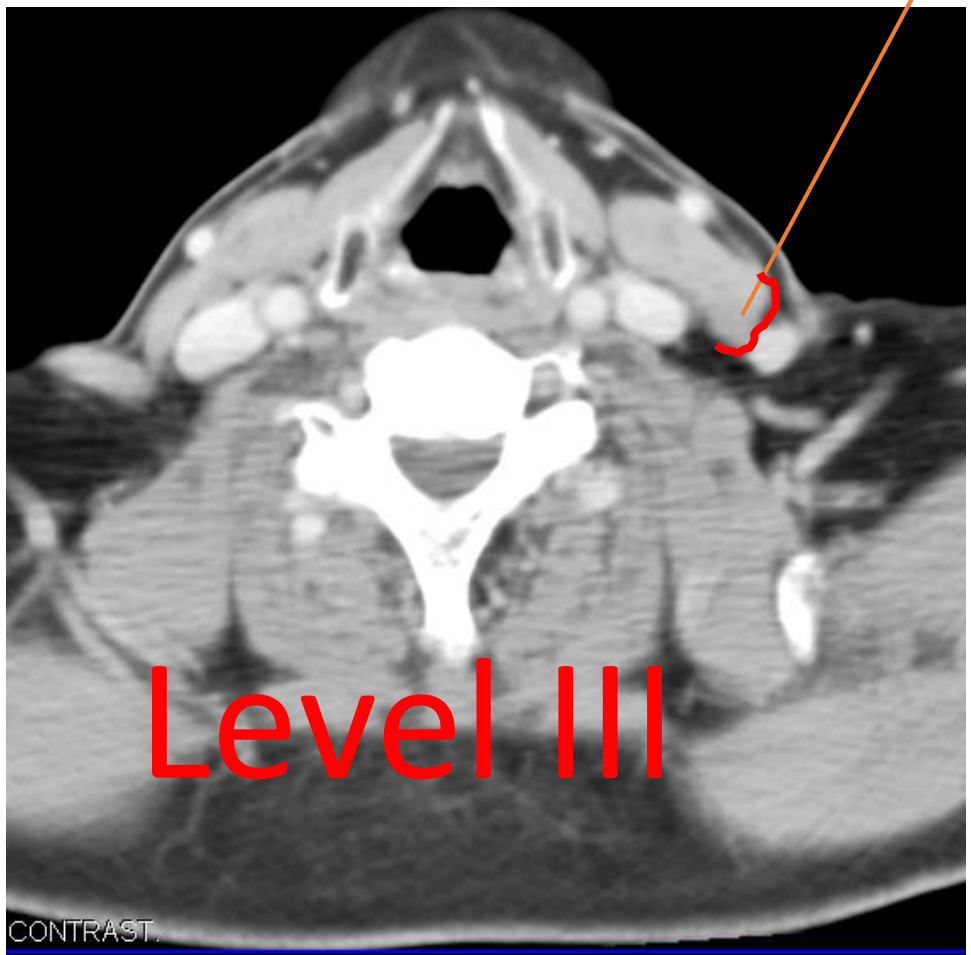


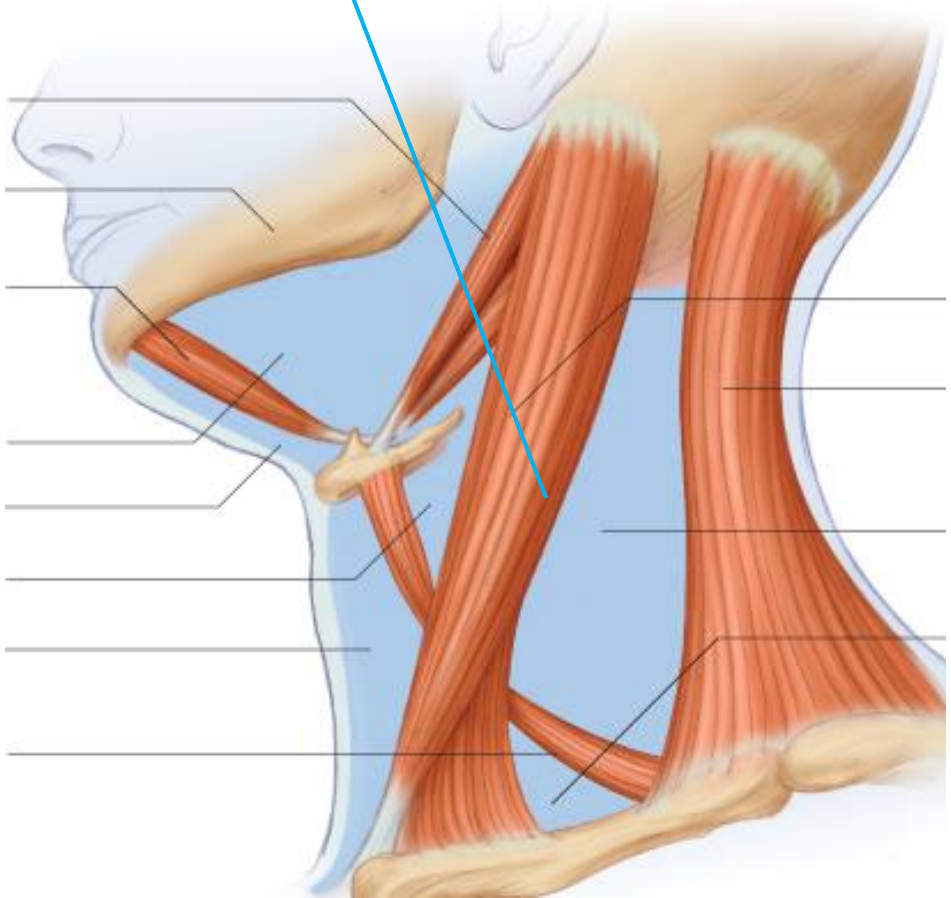
Anterior-> **Posterolateral edge of the sternohyoid muscle and the anterior edge of the SCM muscle,**



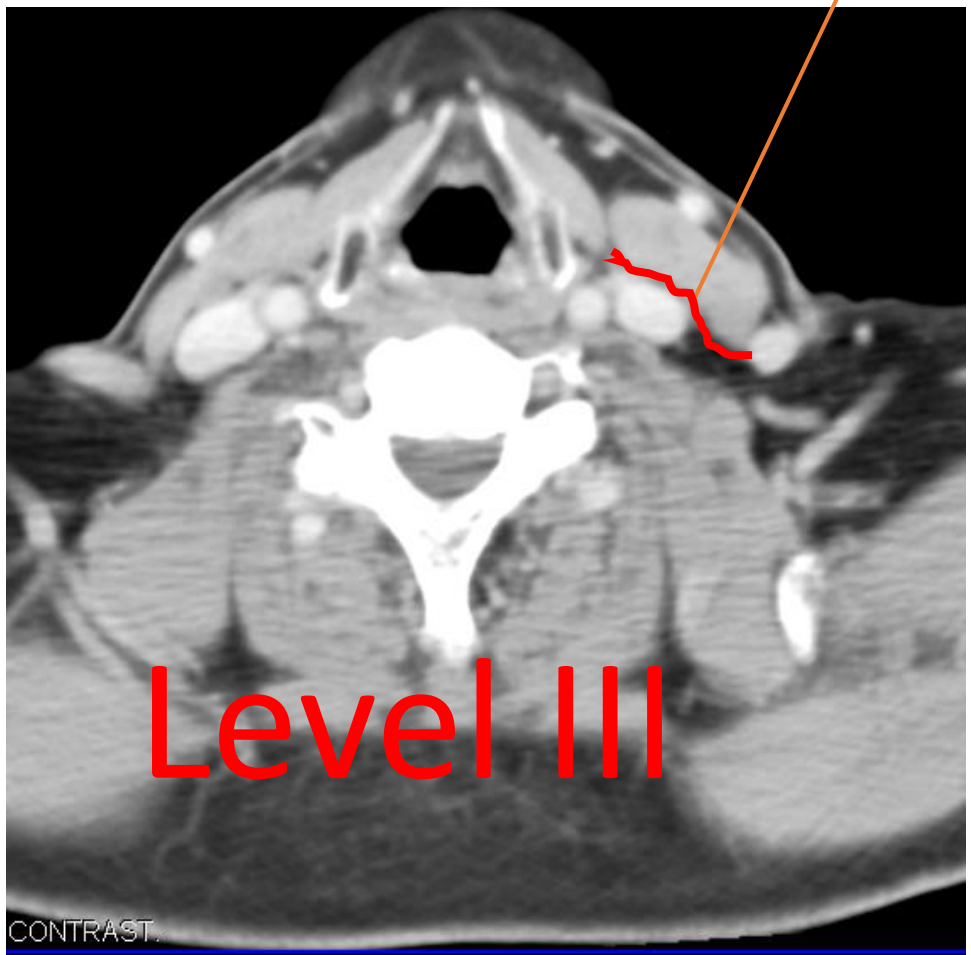


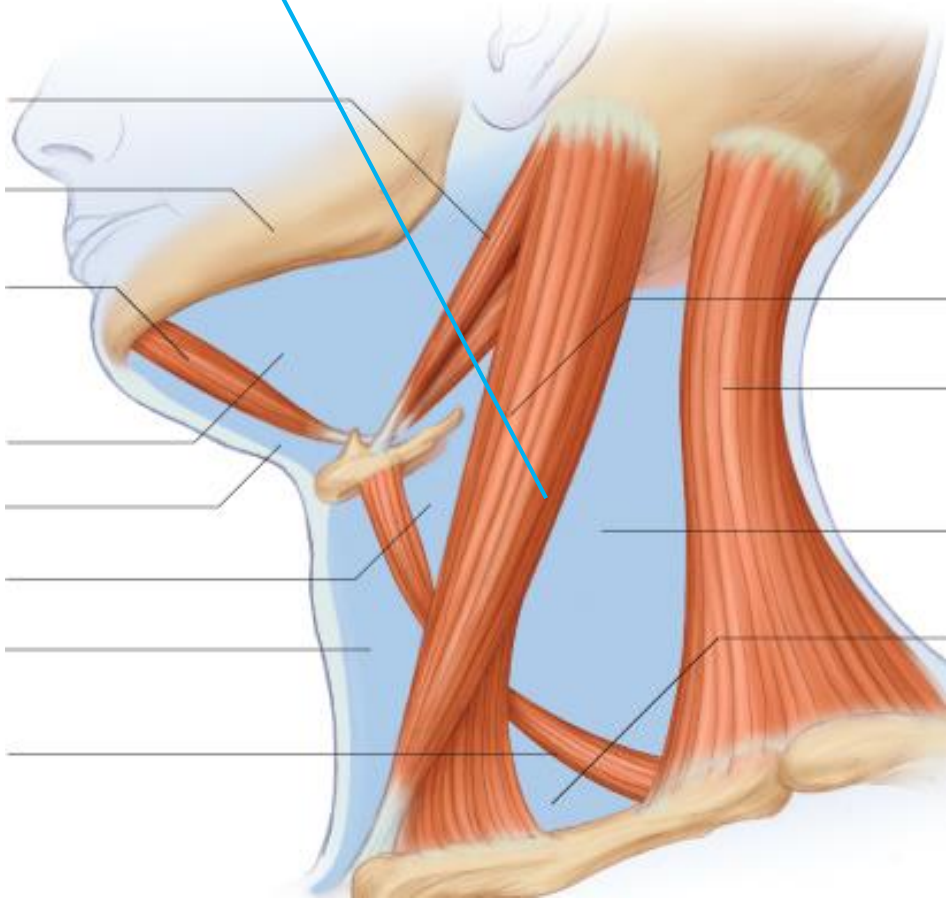
Posterior-> Posterior edge of the SCM muscle



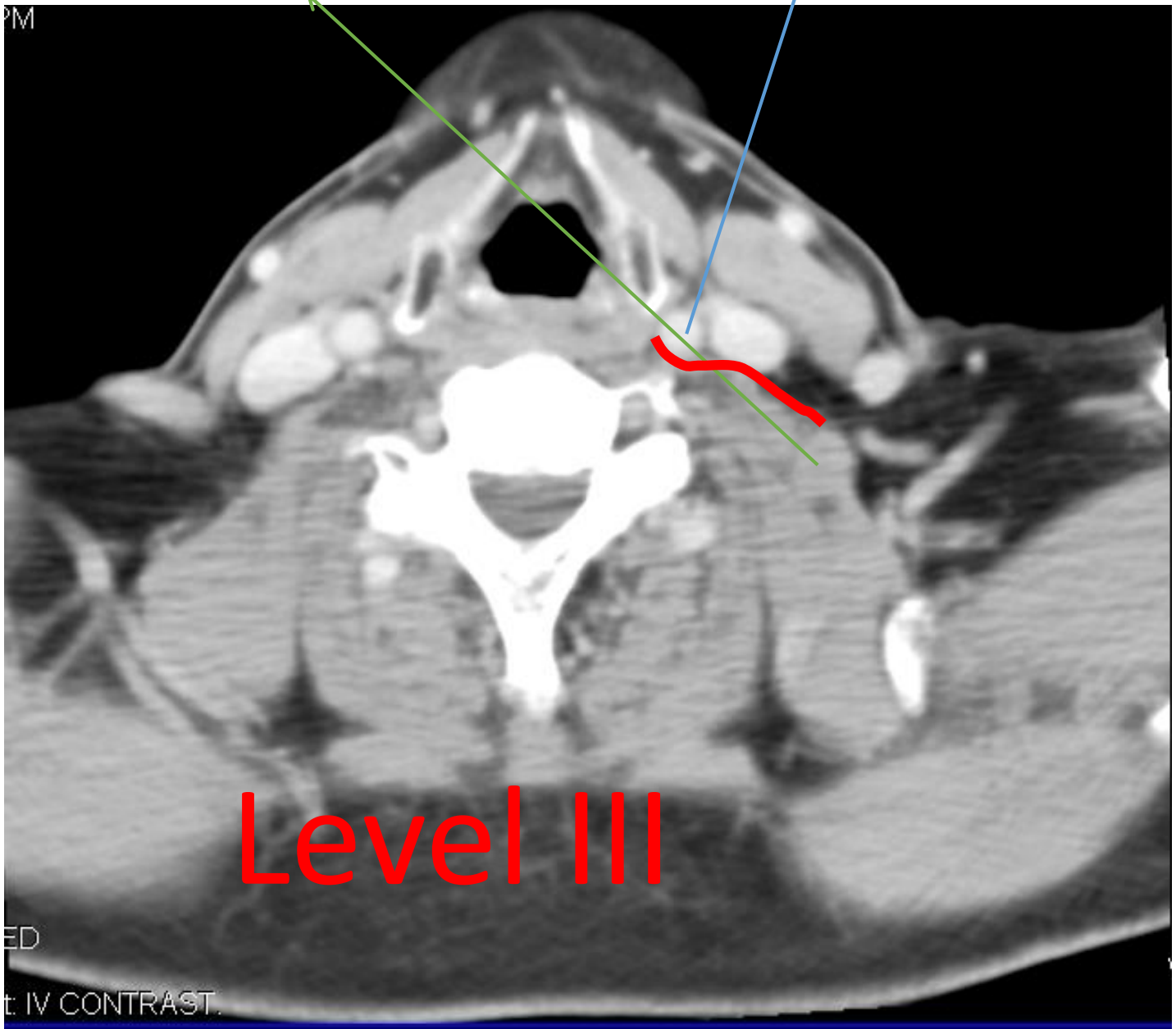


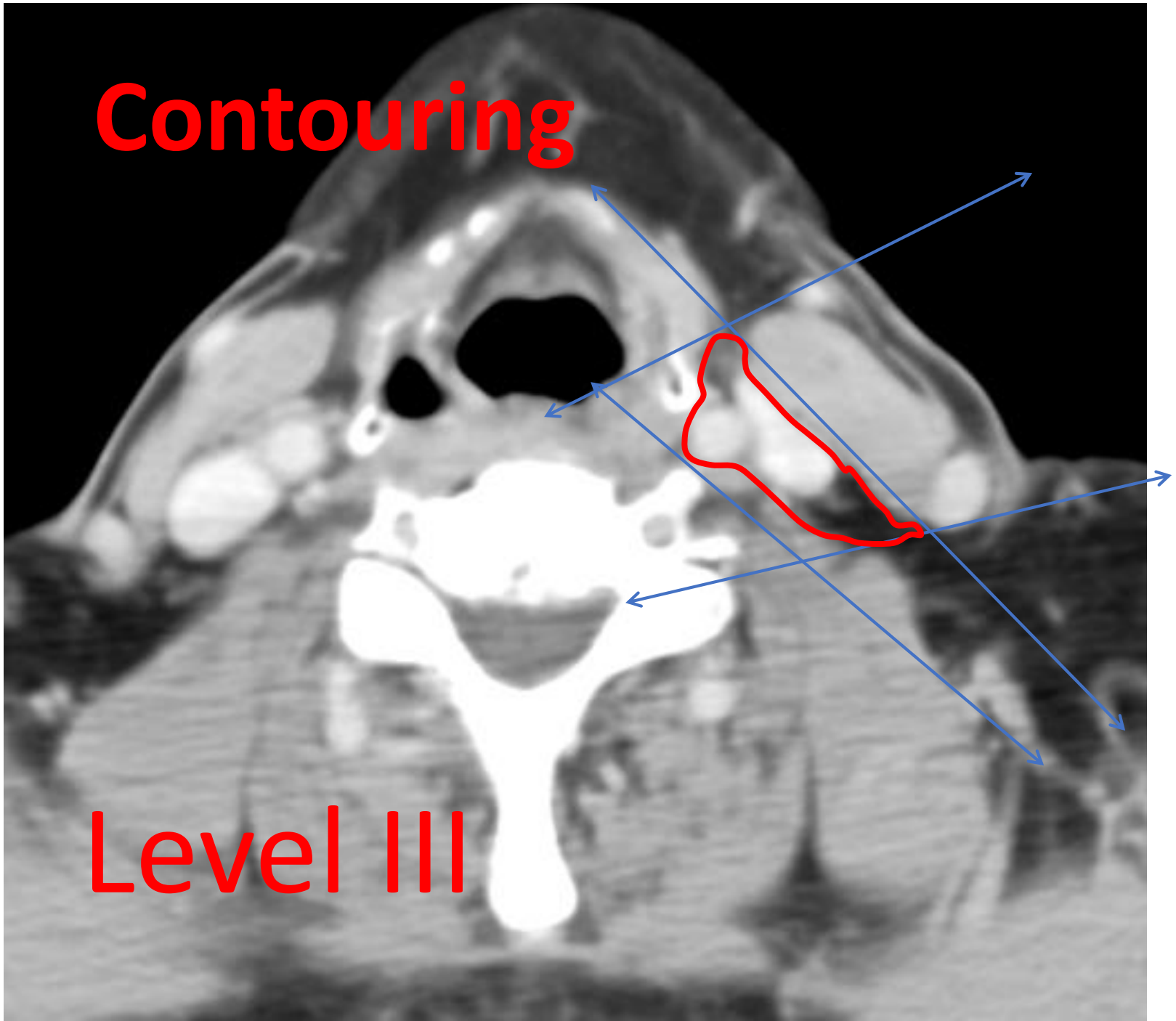
Lateral-> Medial edge of the SCM muscle



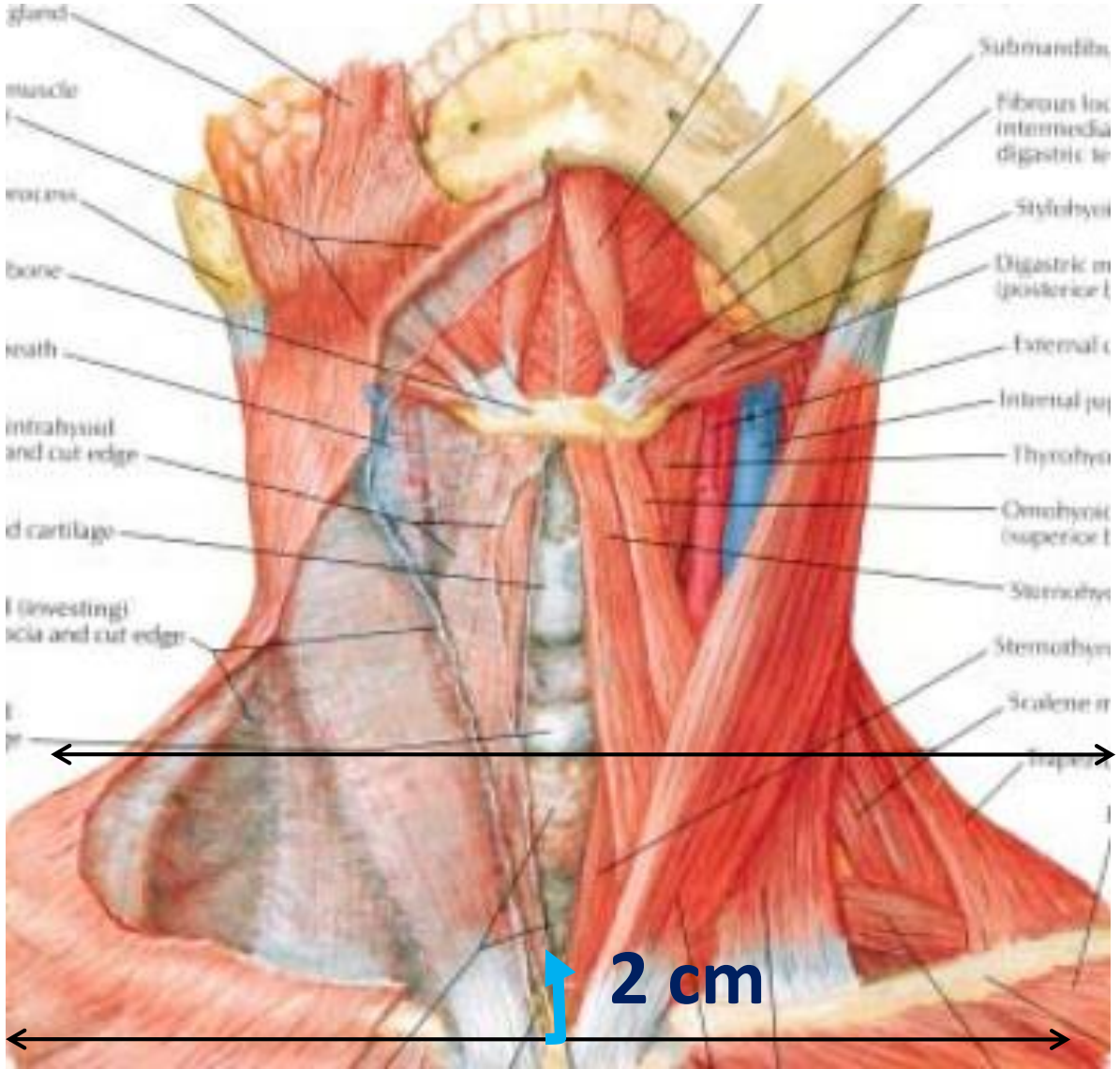


Medial-> Medial edge of the internal carotid artery and the paraspinal muscles (scalenius).



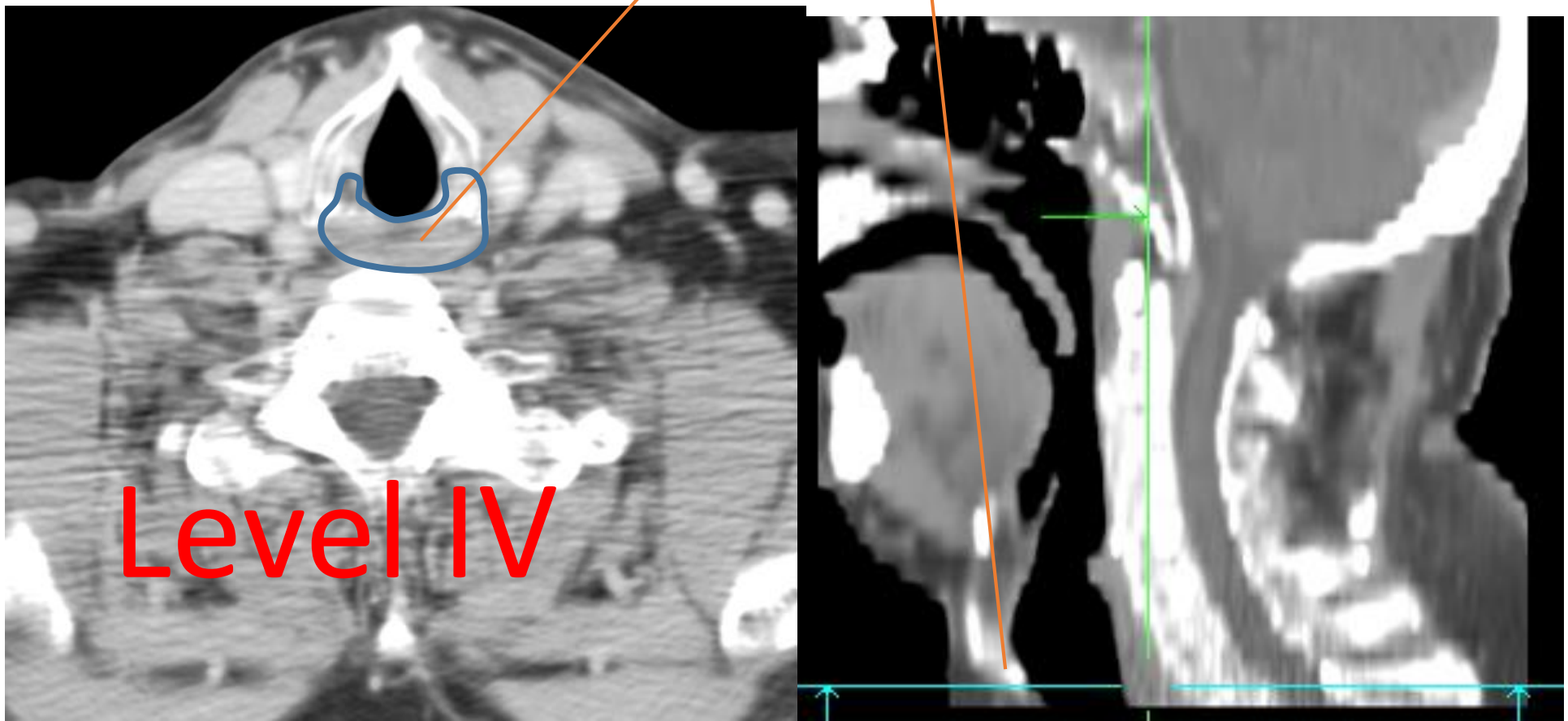

Contouring
Level III

Level IV



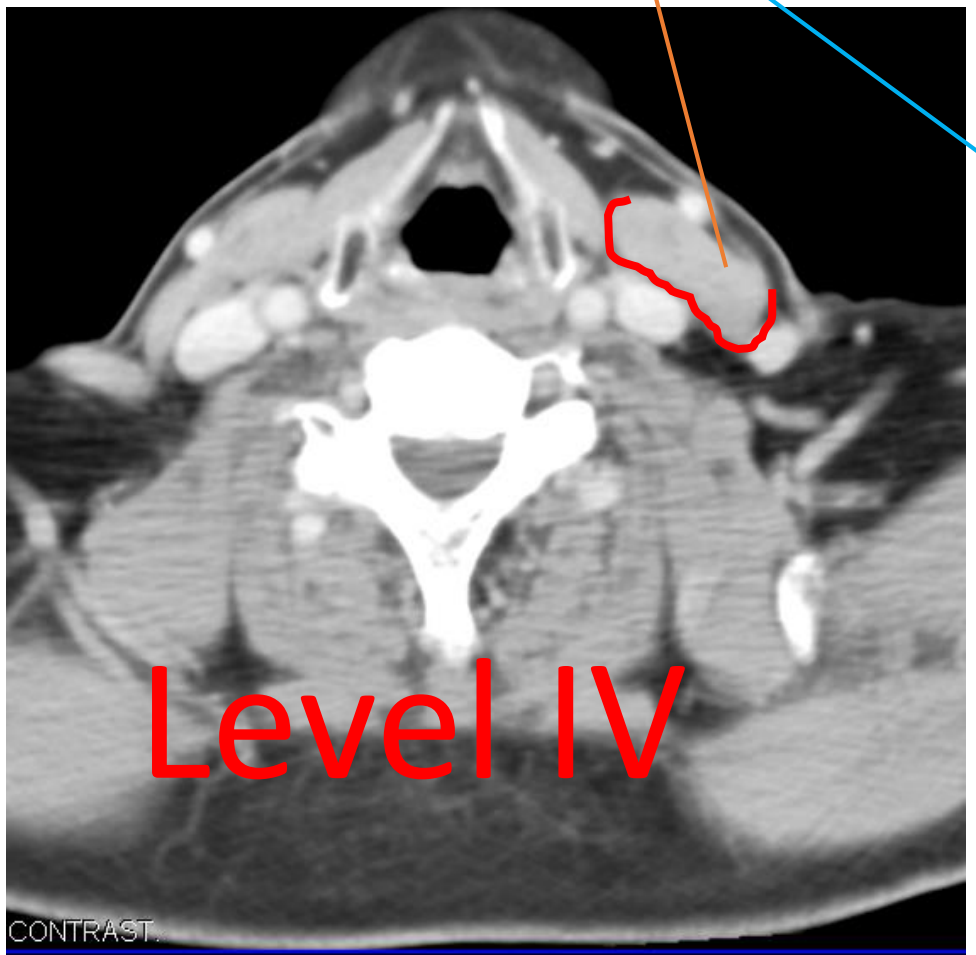
- includes the lower jugular lymph nodes located around the inferior third of the IJV.
- According to Robbins, it extends from the caudal limit of level III to the clavicle.
- But since surgeons never dissect up to clavicle so consensus is that the caudal limit is 2cm cranial to the cranial edge of sterno-clavicular joint.

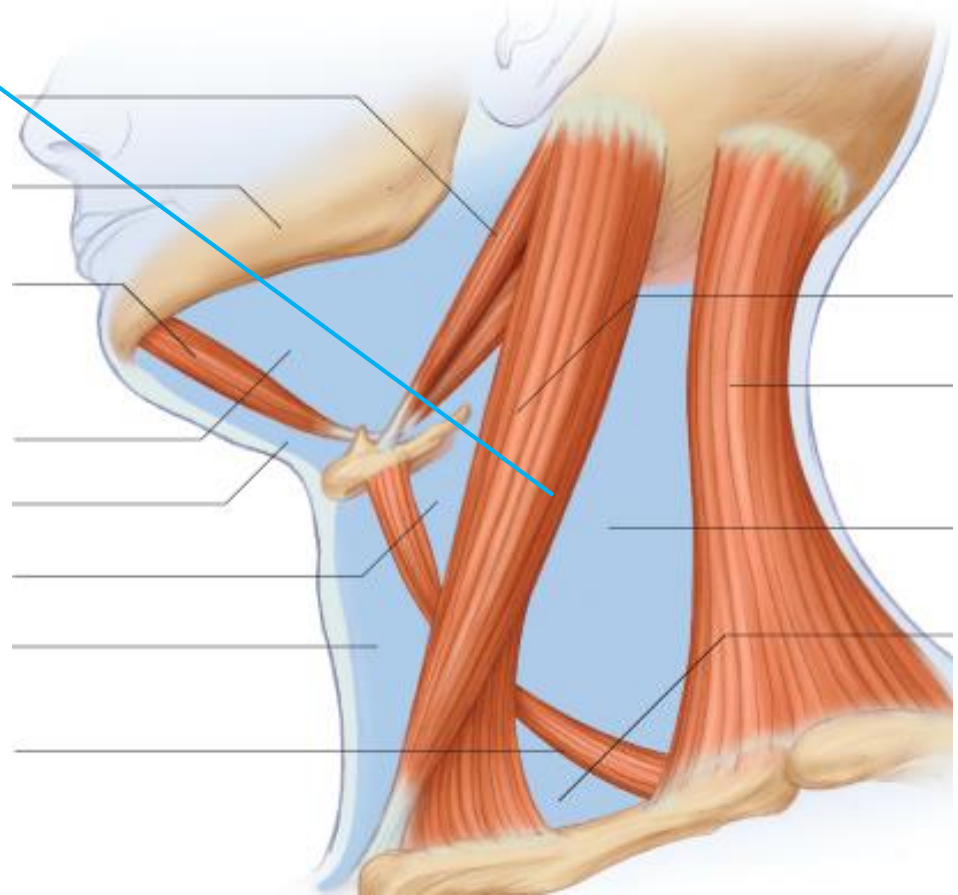
Cranial-> Caudal edge of the cricoid cartilage.



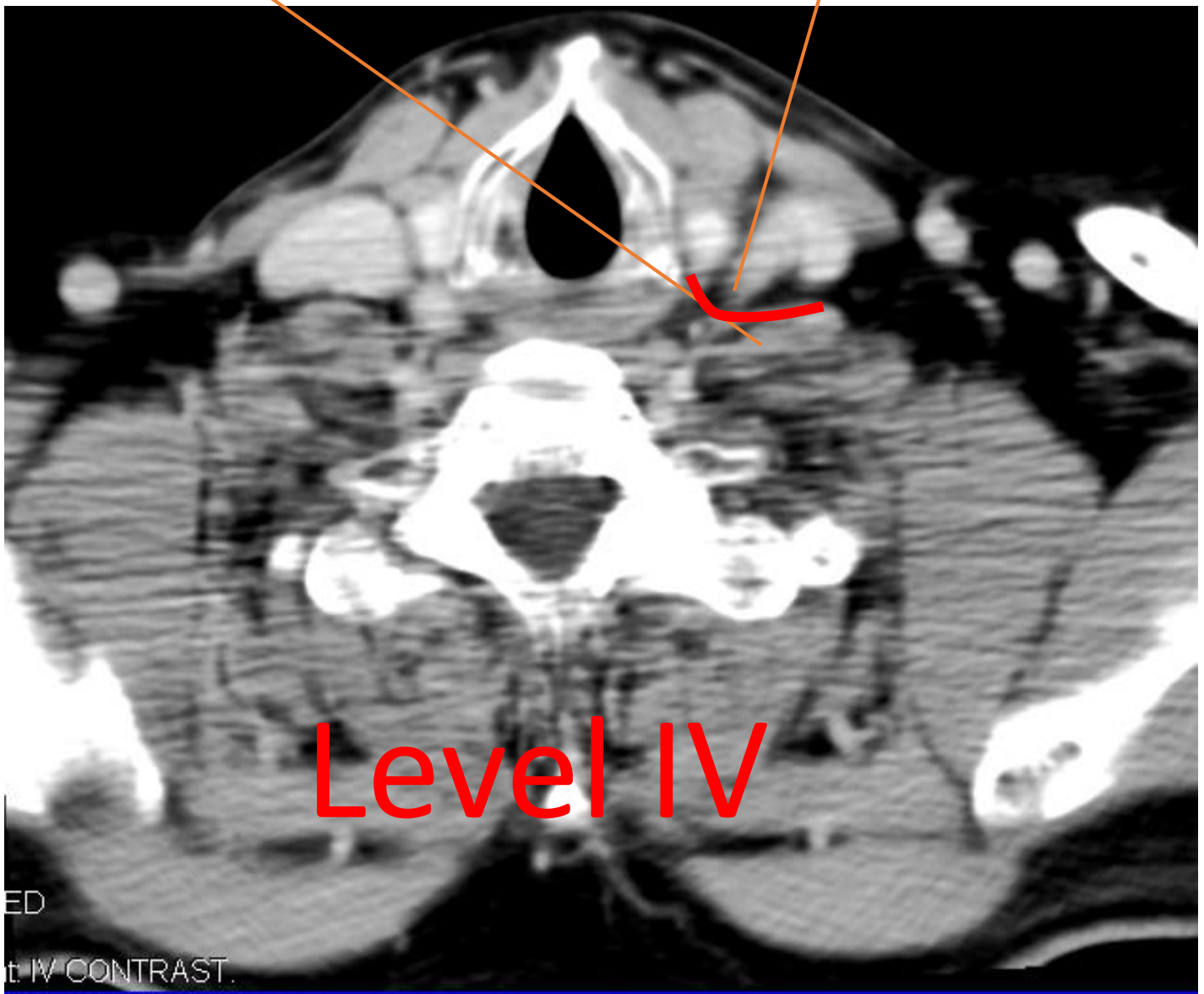
Anterior
Posterior
Lateral.

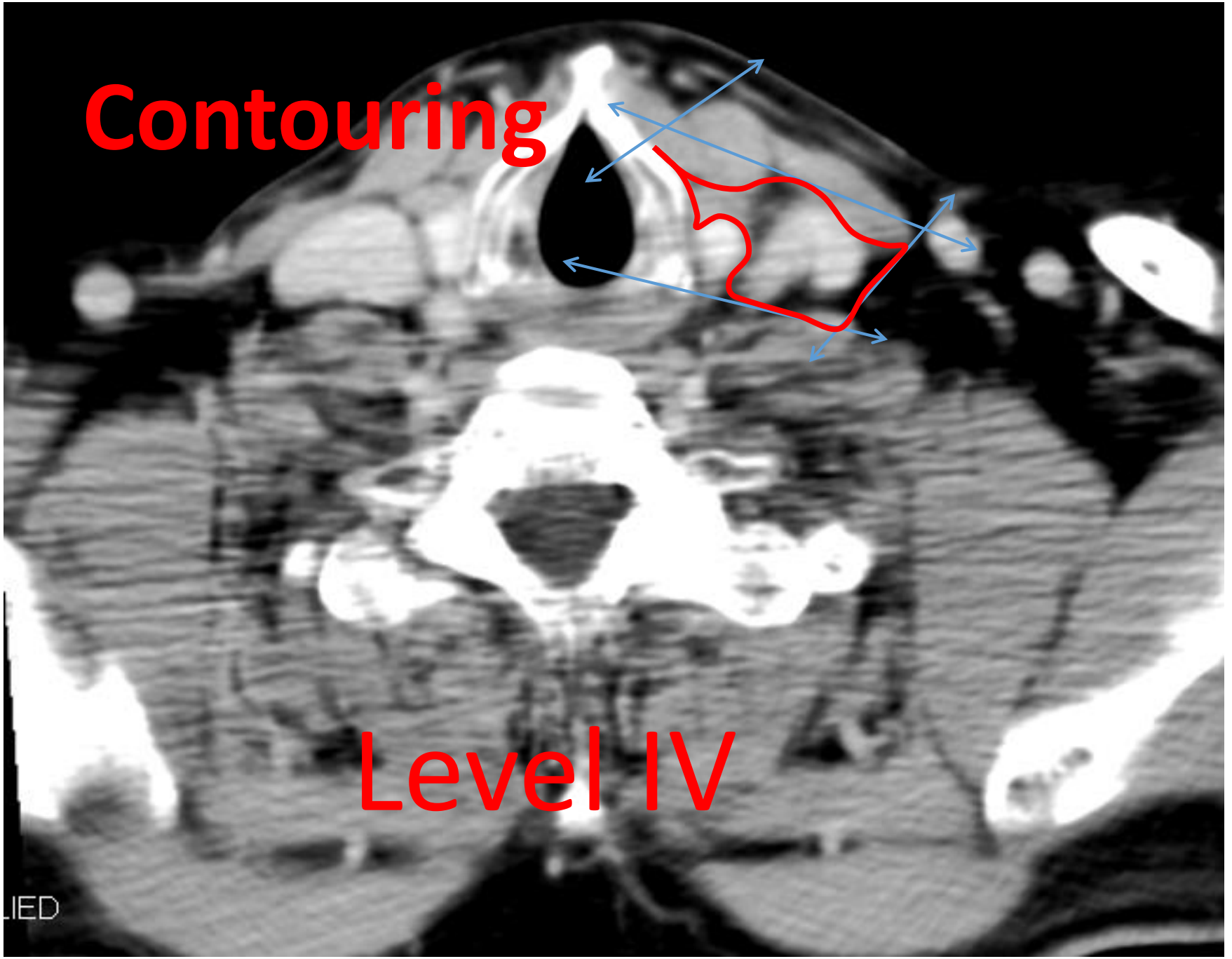
Anterior edge , posterior edge and medial edge of the SCM muscle, respectively





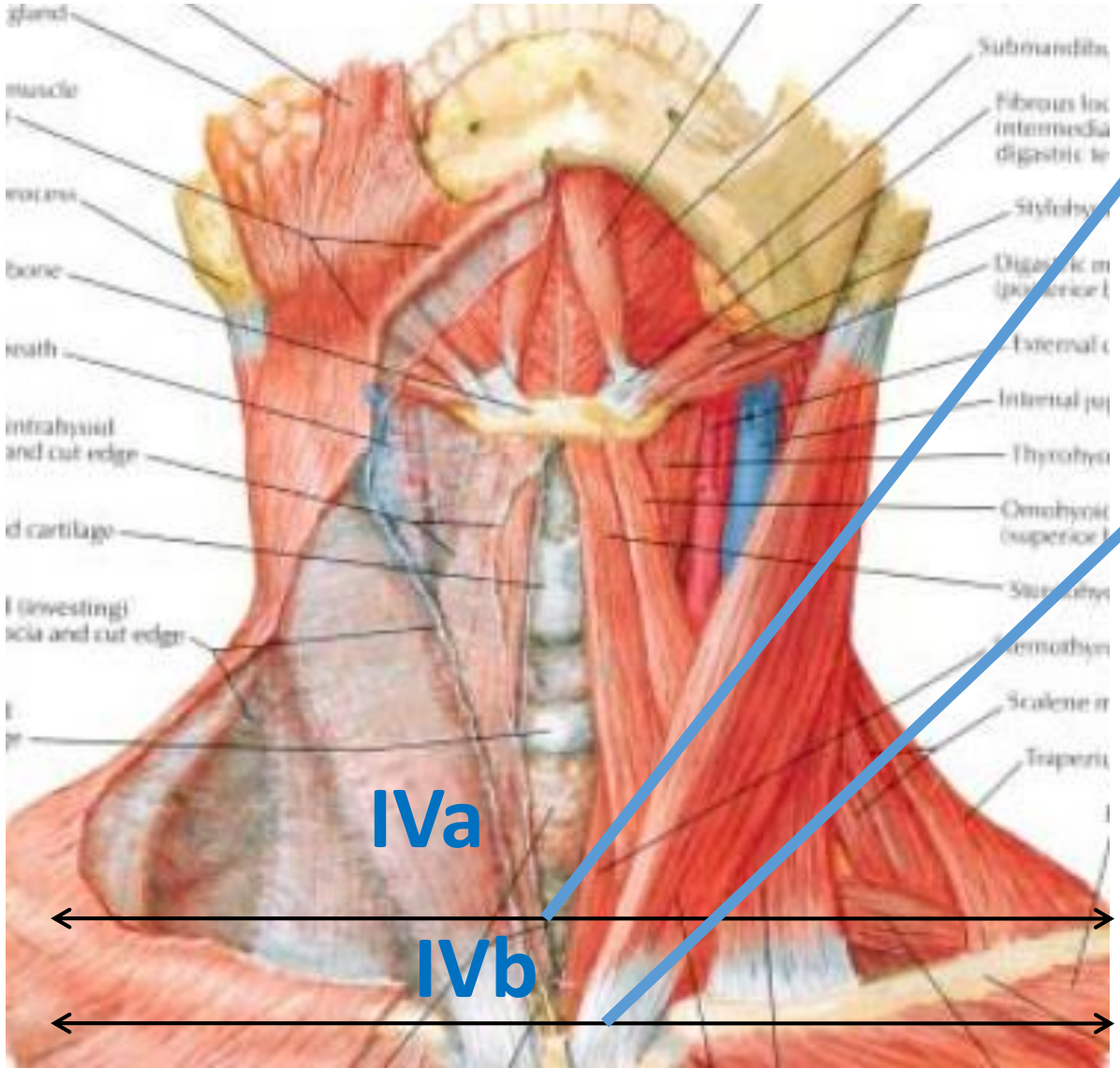
Medial-> Medial edge of the internal carotid artery and the paraspinal muscles (scalenius)




Contouring
Level IV
IED

Level IV → IVa
IVb *Medial Supra Clavicular*

2013 Guidelines



Continuation of level IV a

Cranial extent up to cranial edge of sternal manubrium

Primary for level IVa

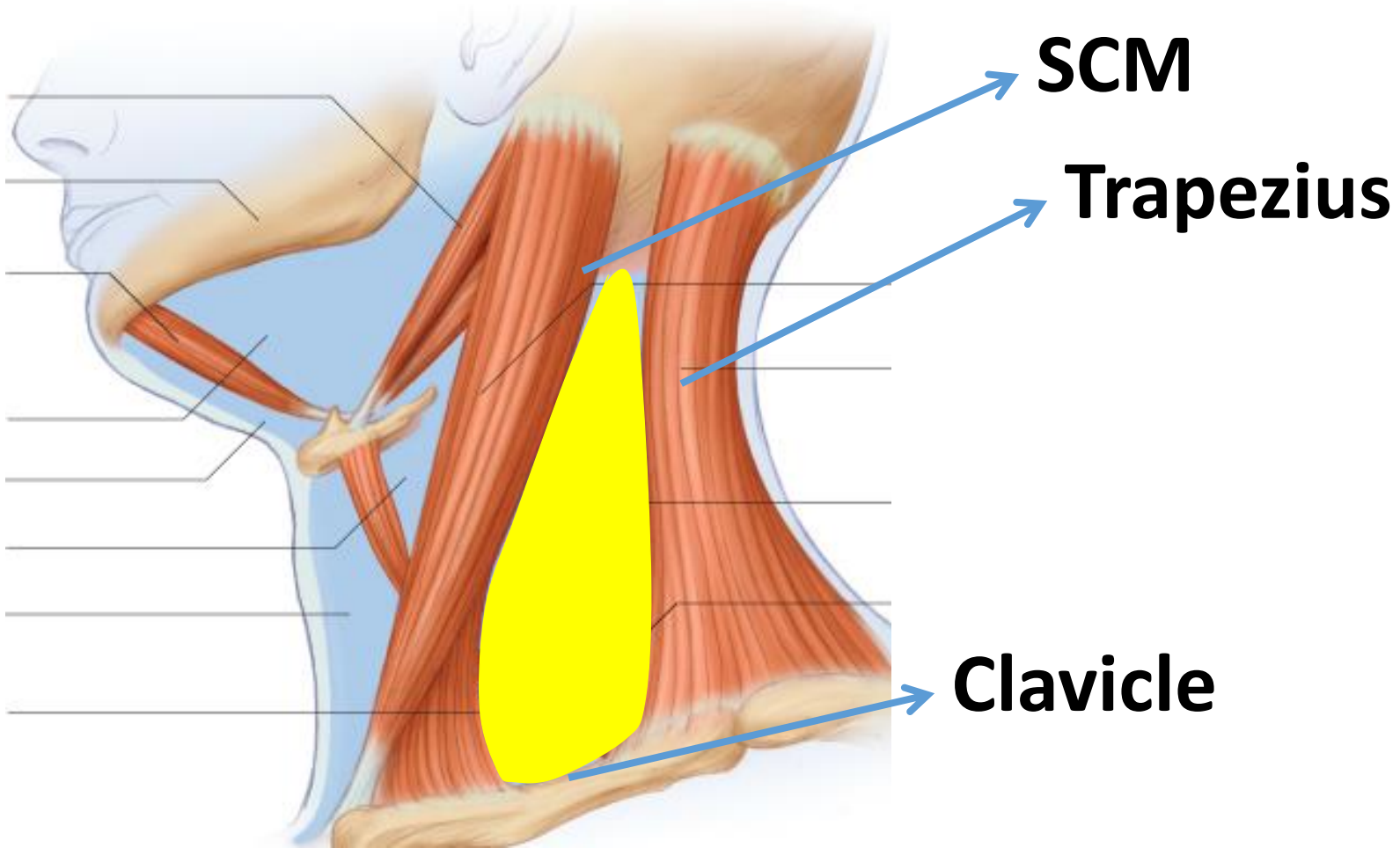
- **Hypopharynx.**
- **Larynx**
- **Oropharynx.**
- **Skip metastasis from ant tongue.**
- **Cervical esophagus**
- **Thyroid**

Level IVb

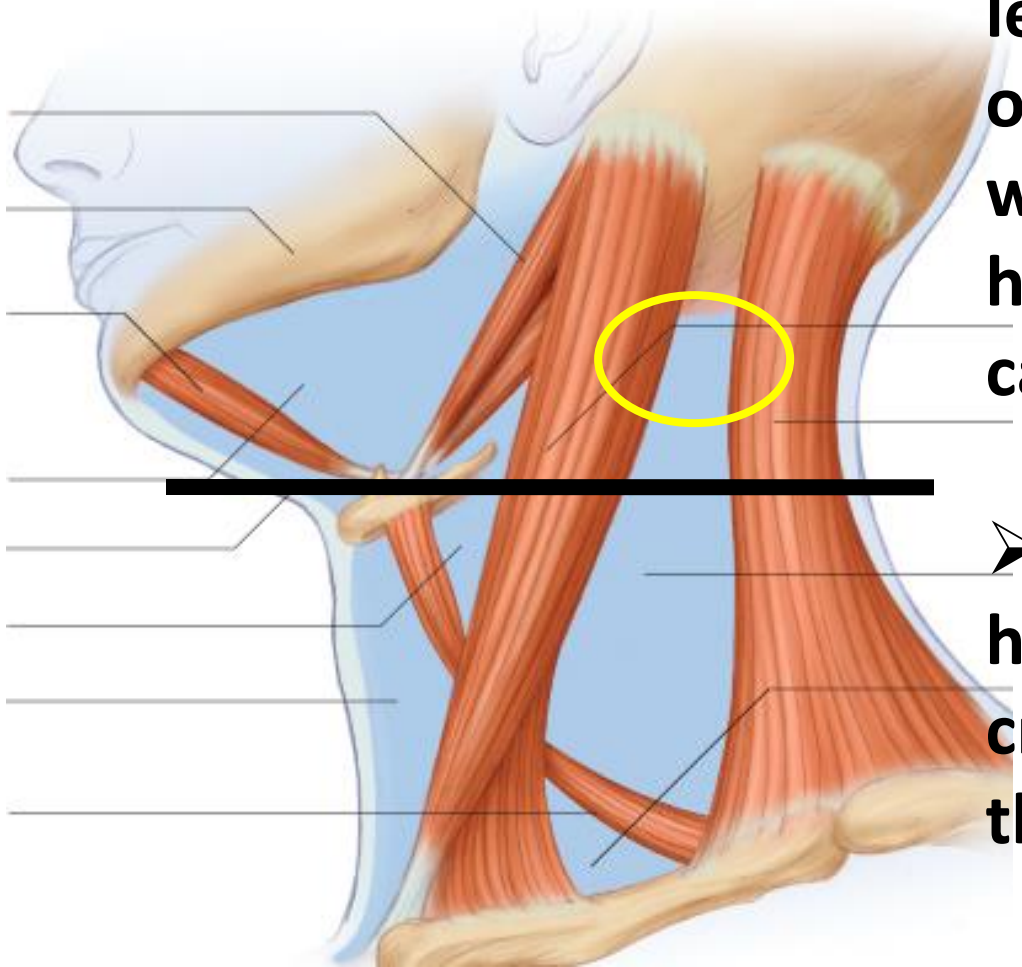
Sub Glottic Larynx and with positive level IV a nodes

Level V

Nodes in the posterior triangle



Level V



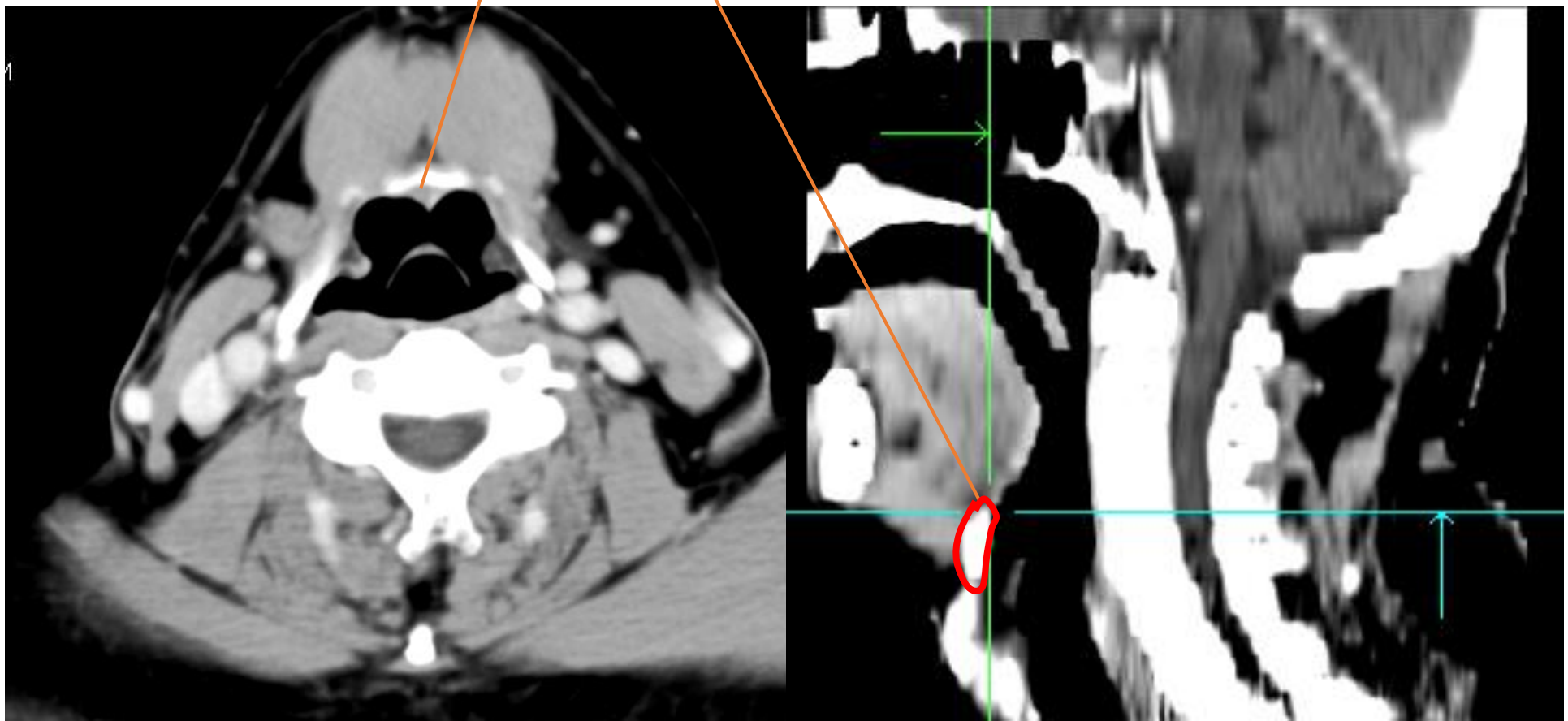
Cranial

- The uppermost part of level V contains superficial occipital lymph node(s), which are not involved in head and neck ca except skin cancer.

- So cranial limit is a horizontal plane crossing the cranial edge of the body of the hyoid bone

Cranial -> **Horizontal plane crossing the cranial edge of the body of the hyoid bone**

Level V

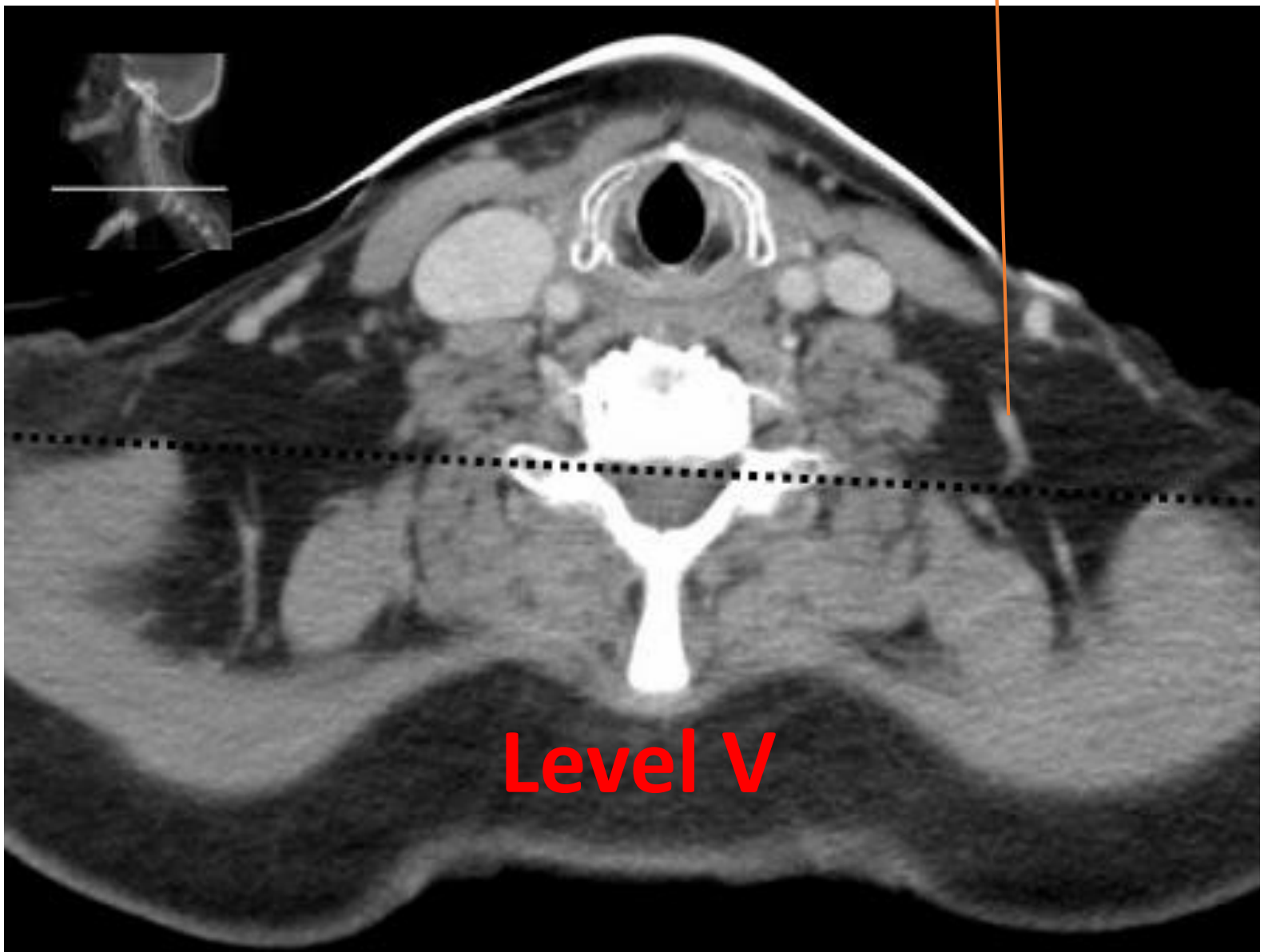


Level V

Caudal

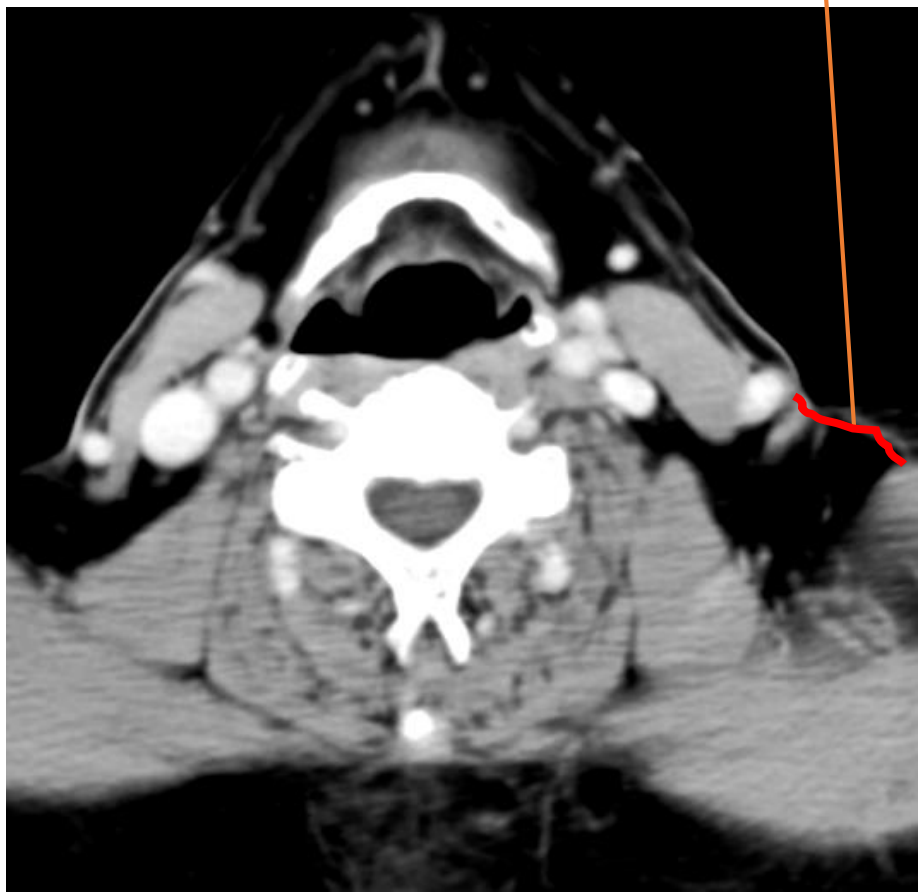
- **For the caudal limit of level V, it appears from critical examination of neck dissection procedure, that surgeons never dissect up to clavicle but go only up to to the transverse cervical vessels.**
- **Hence, caudal limit of level V is kept at CT slices encompassing the cervical transverse vessels**

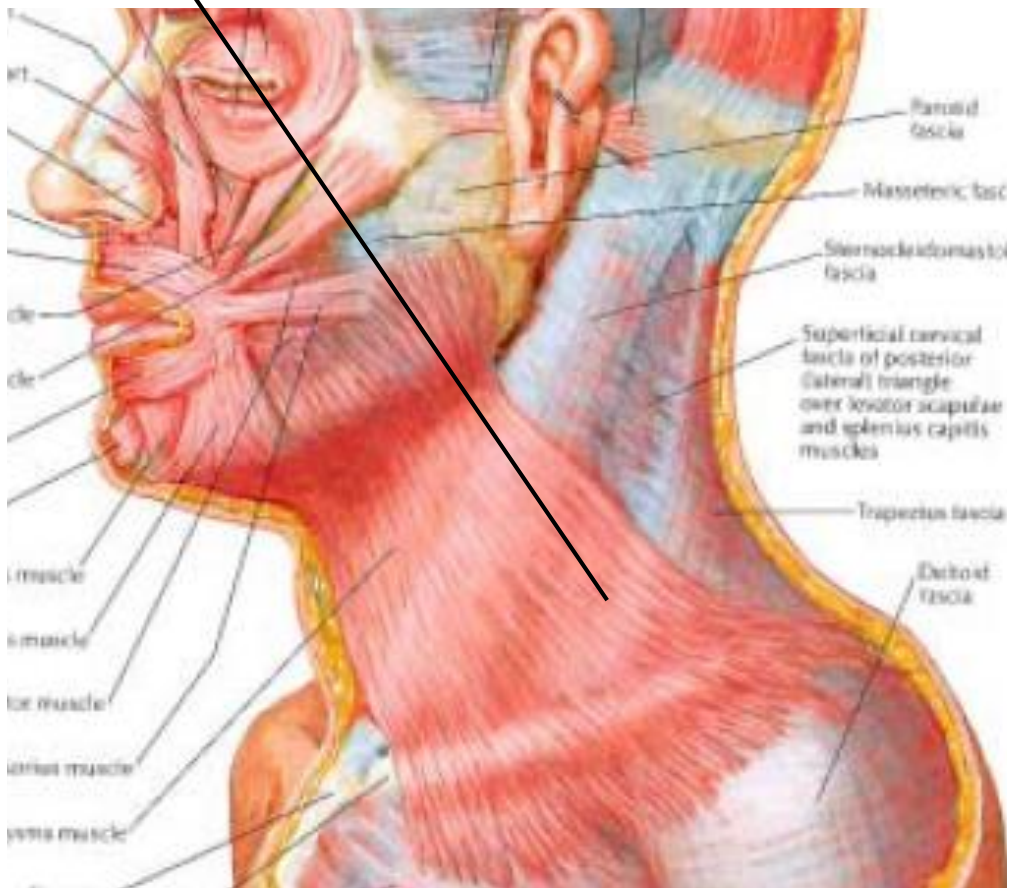
Caudal -> CT slices at the level of transverse Cervical vessels



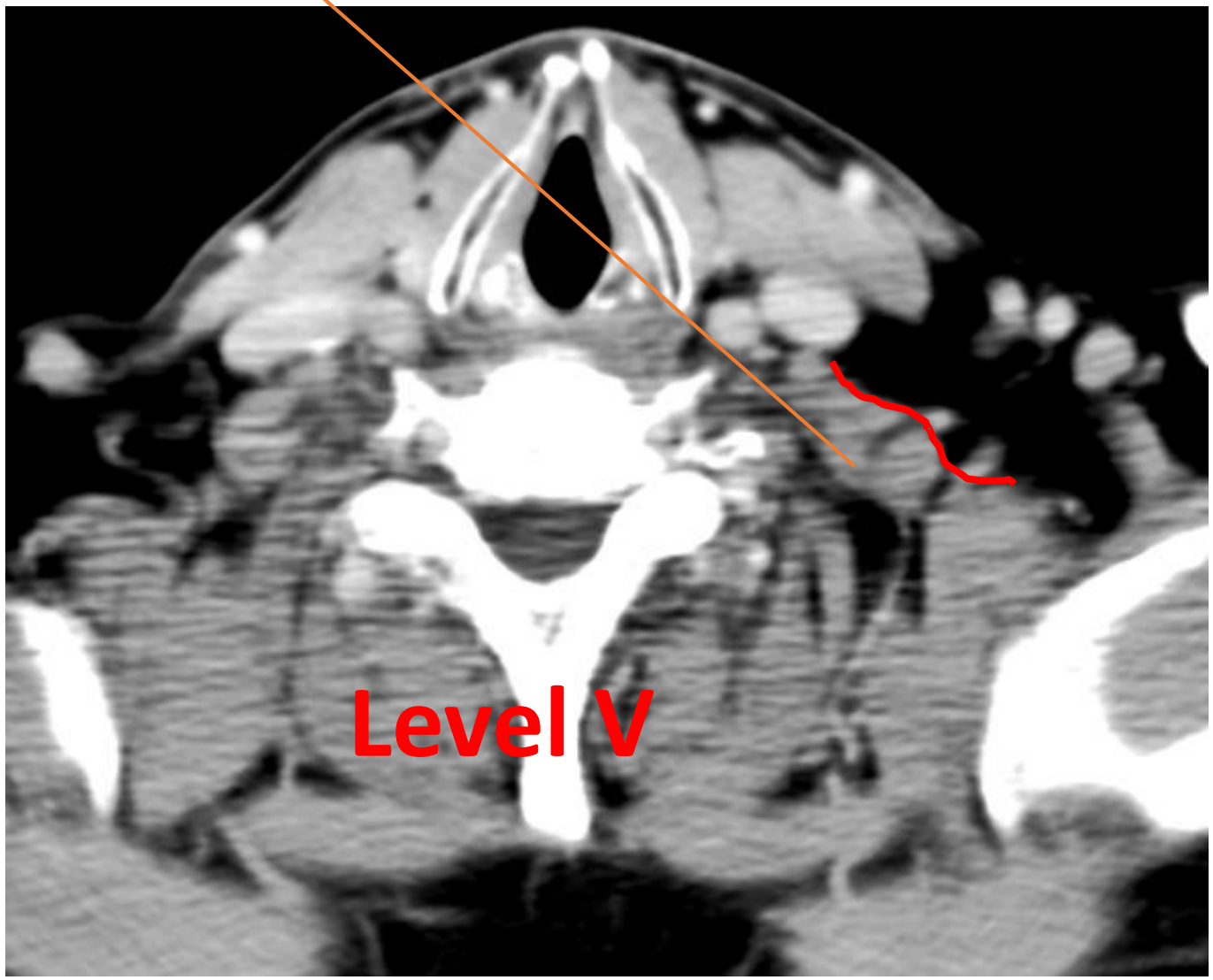
Lateral-> Platysma muscle and the skin,

Level V



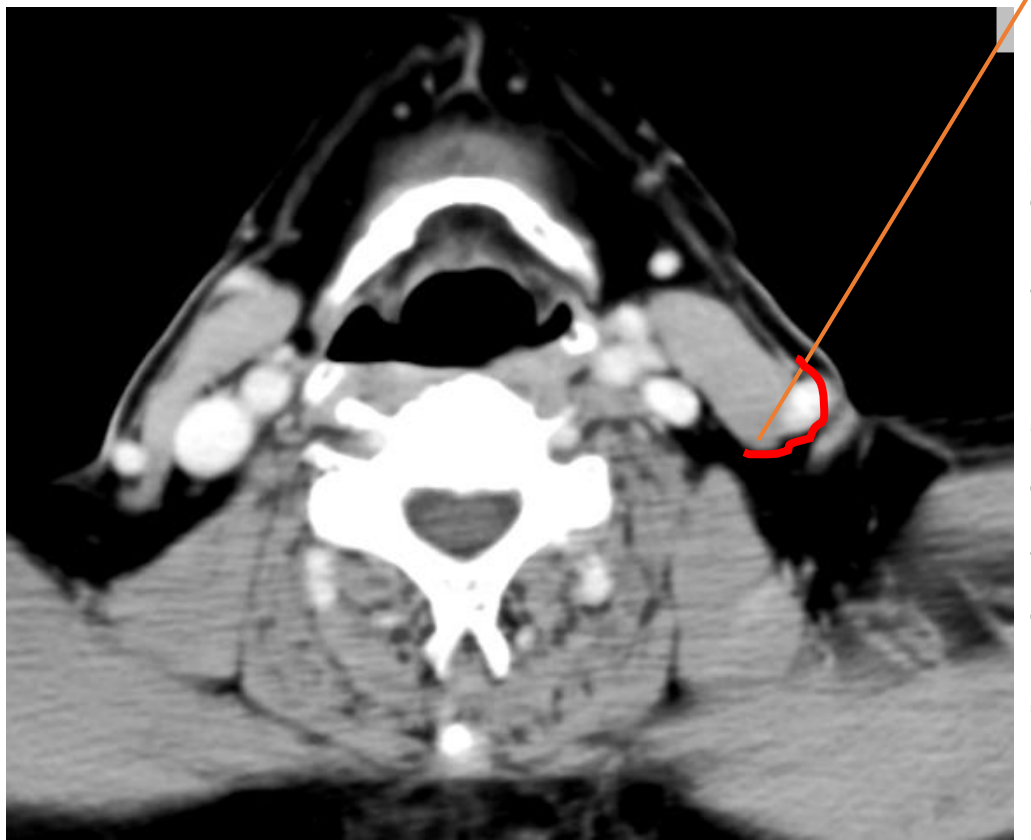


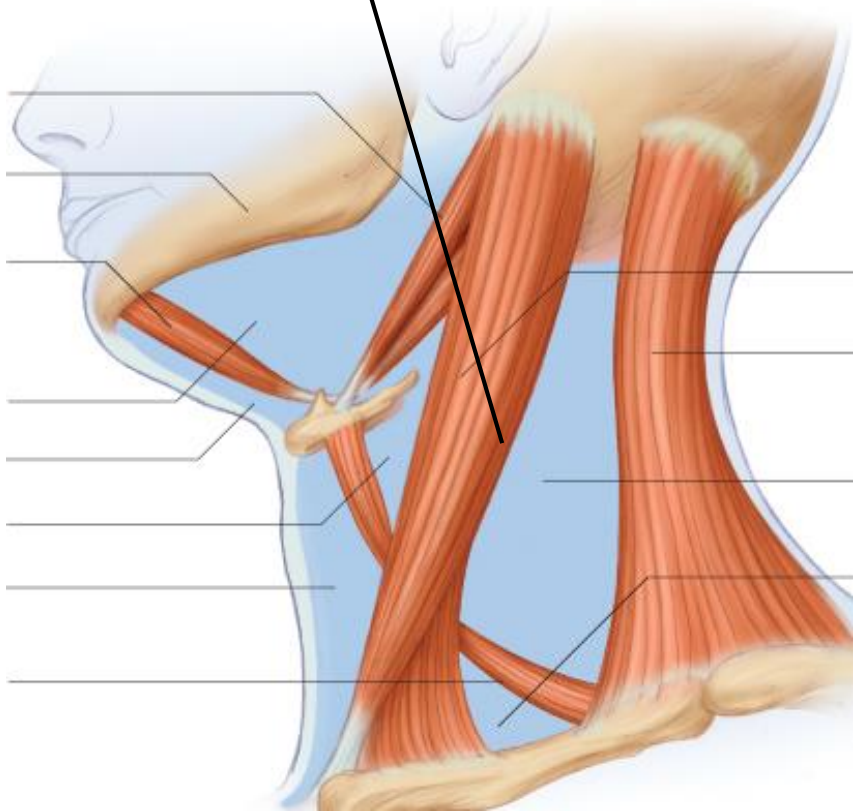
Medial -> **Paraspinal muscles (splenius capitis, levator scapulae and scaleni (posterior, medial and anterior) muscles)**



Anterior-> Posterior edge of the SCM muscle

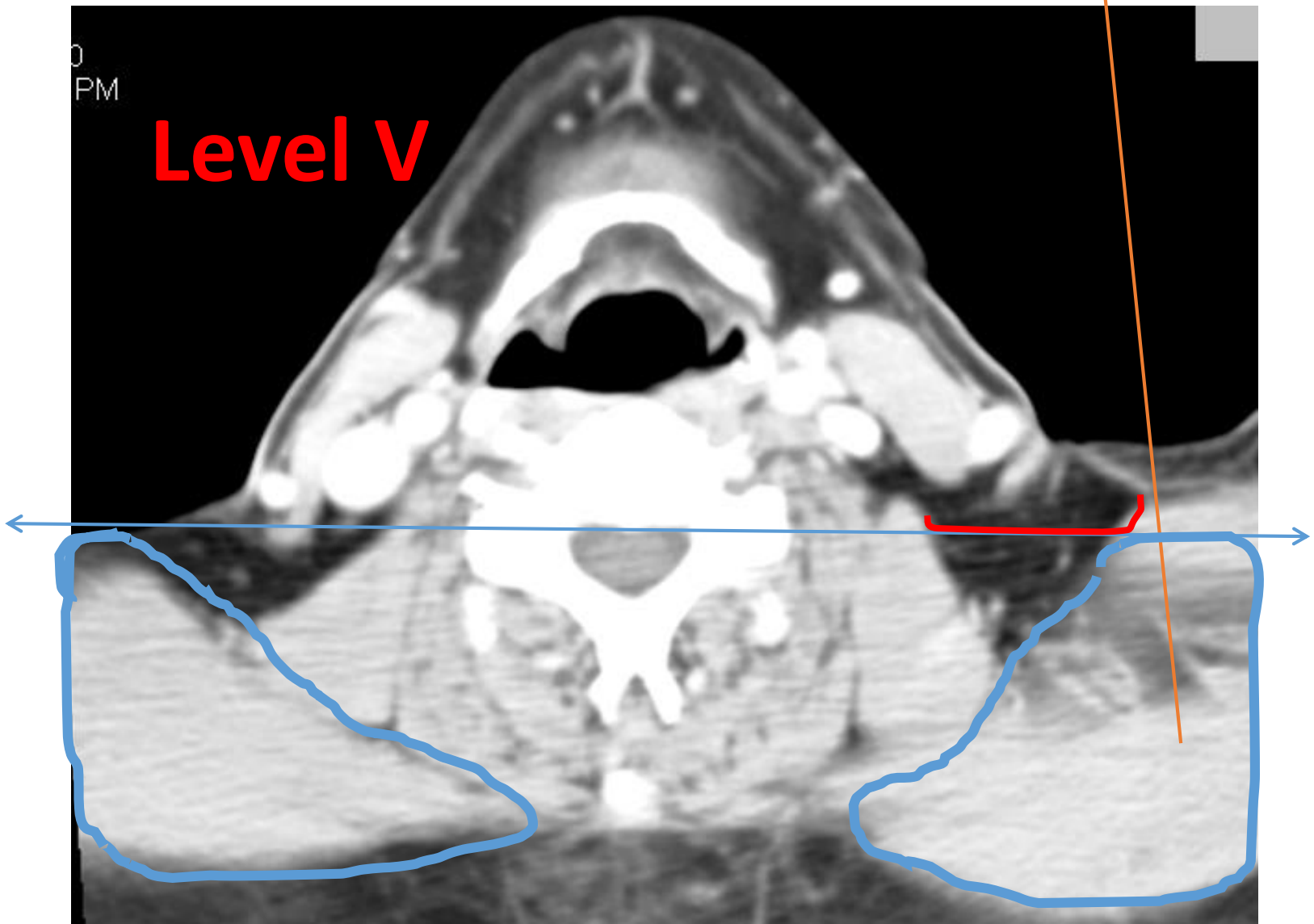
Level V

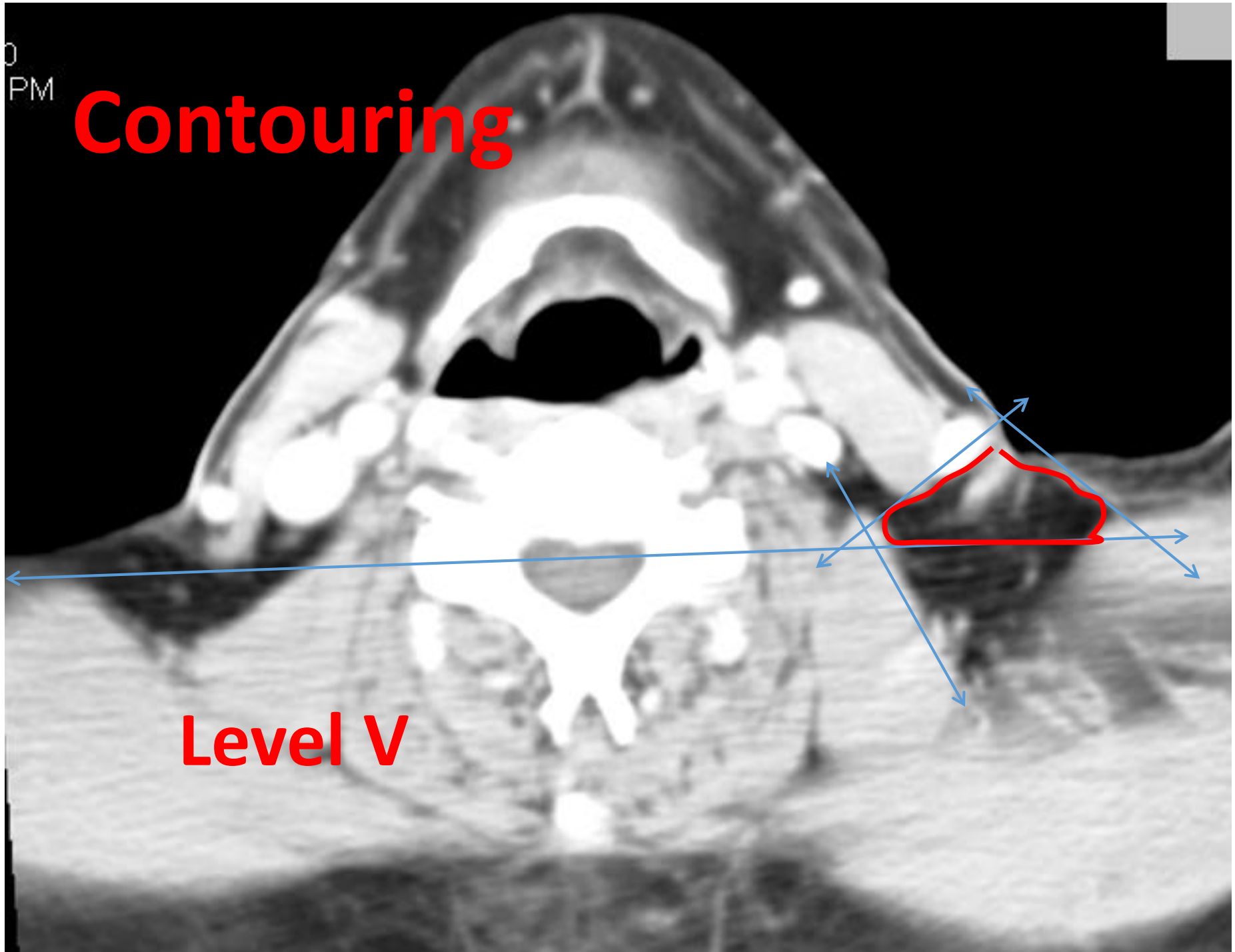




Posterior -> Antero-lateral border of the trapezius muscles

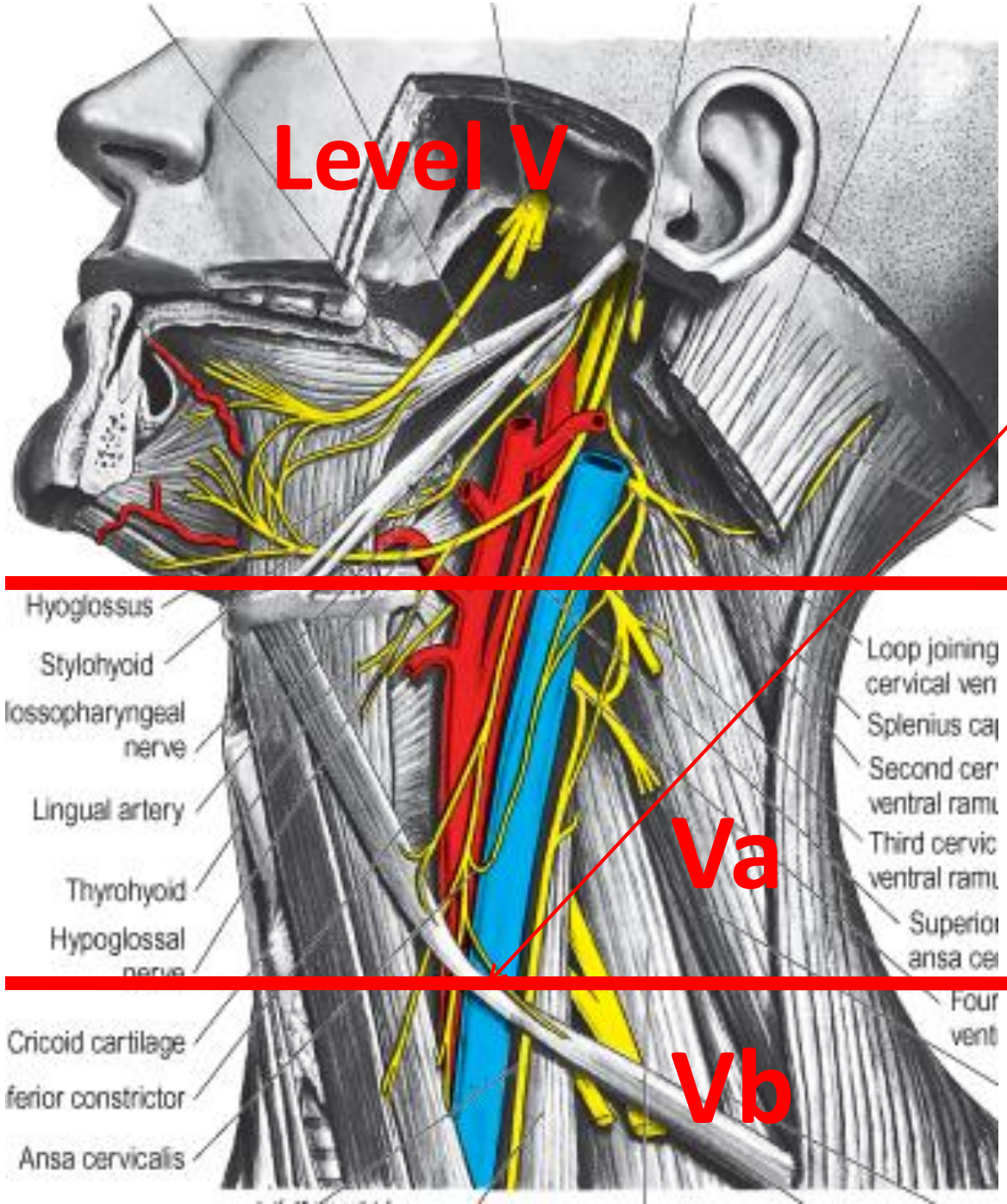
.Practically, a virtual line joining the antero-lateral border of both trapezius muscles can be use to set the posterior limit of level V




PM
Contouring
Level V

Primary for Level V

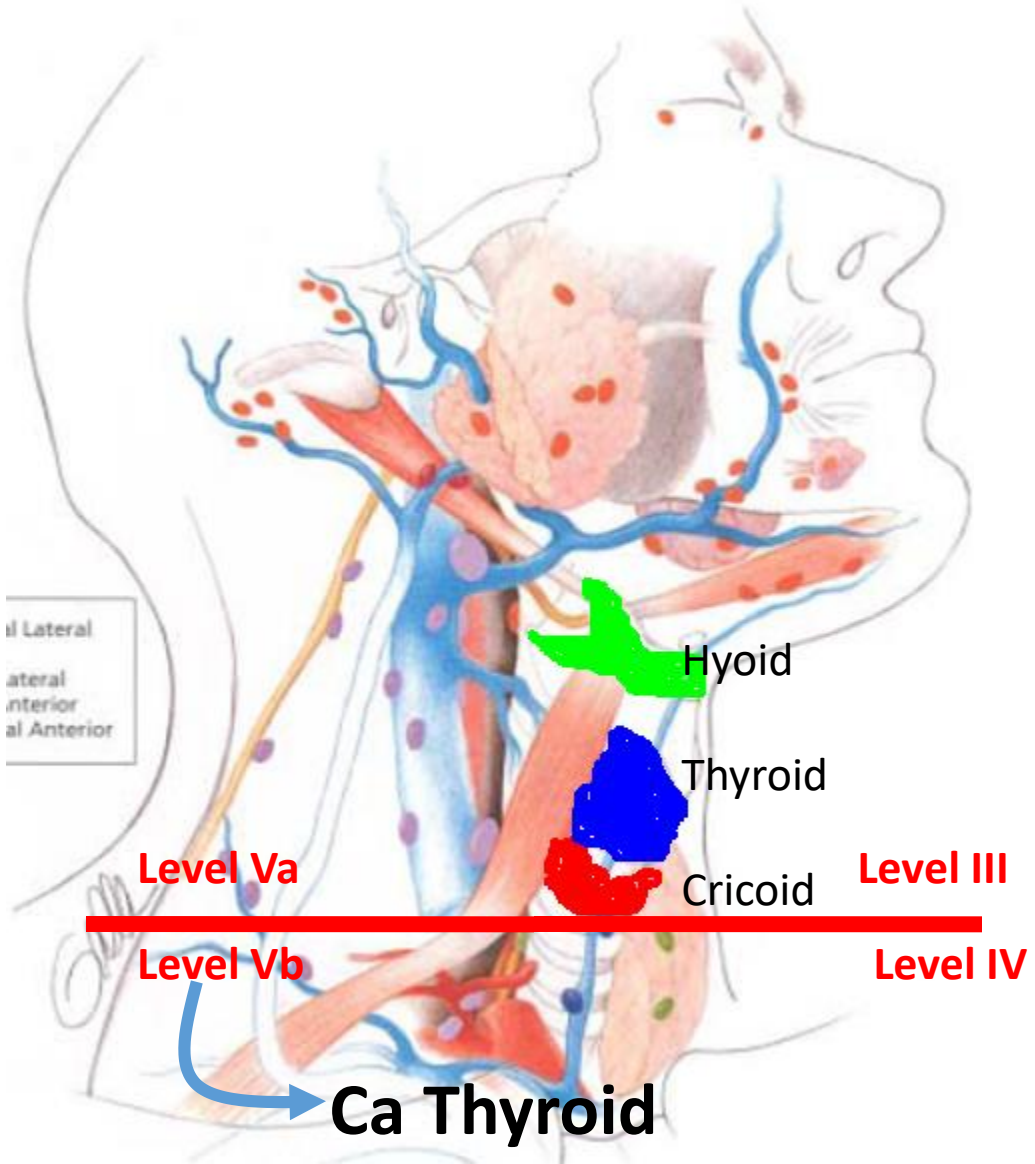
- **Nasopharynx.**
- **Oropharynx.**
- **Thyroid gland.**



- Level V is divided into Va and Vb by omohyoid muscle where it crosses the internal jugular vein.

- But this crossing point can not be appreciated on CT film.

Level V

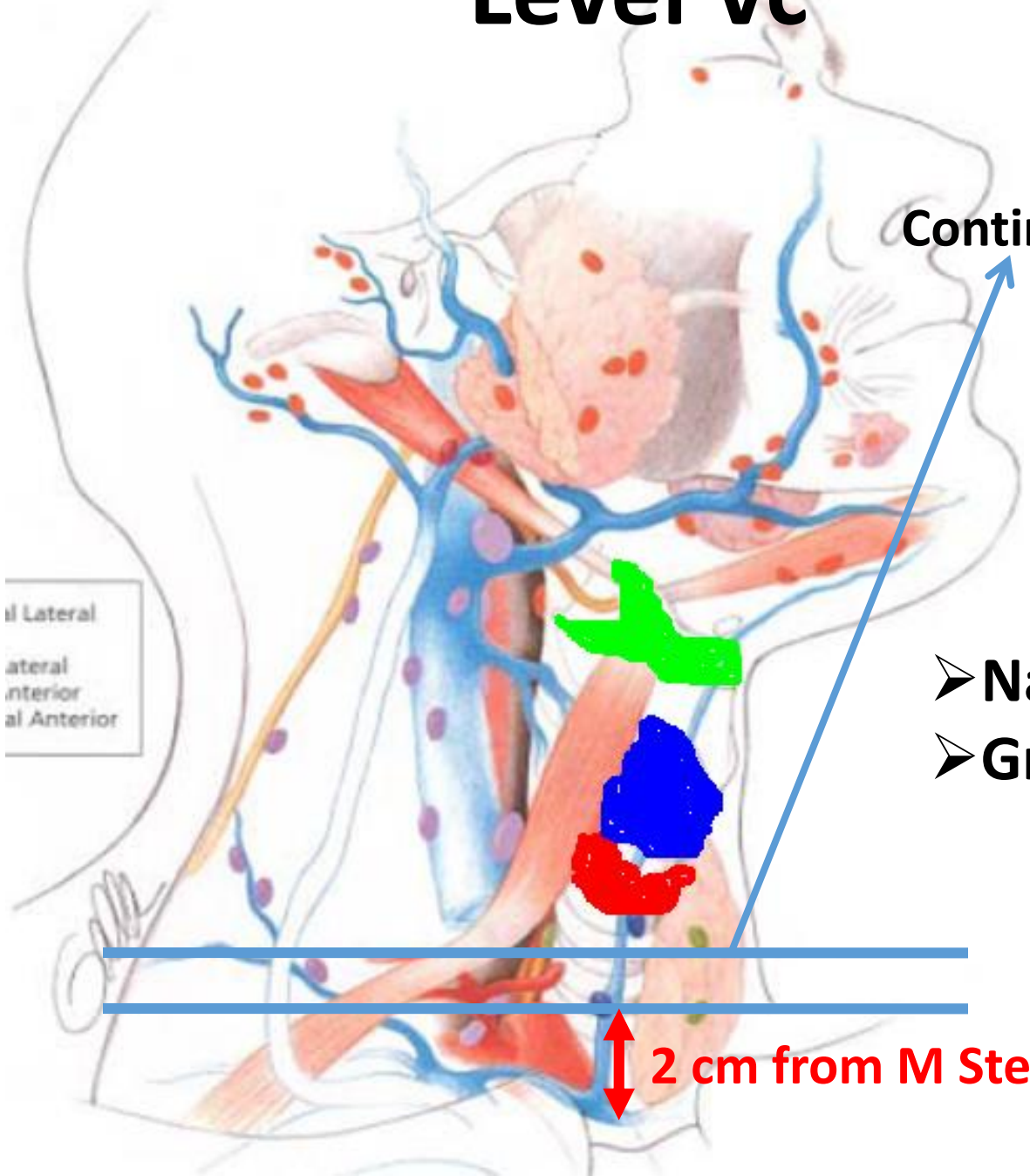


- For practical purpose, use of the plane between levels III and IV extended posteriorly is recommended,

- which means lower border of cricoid can be taken as dividing line between Va and Vb

Level Vc

2013 Guidelines

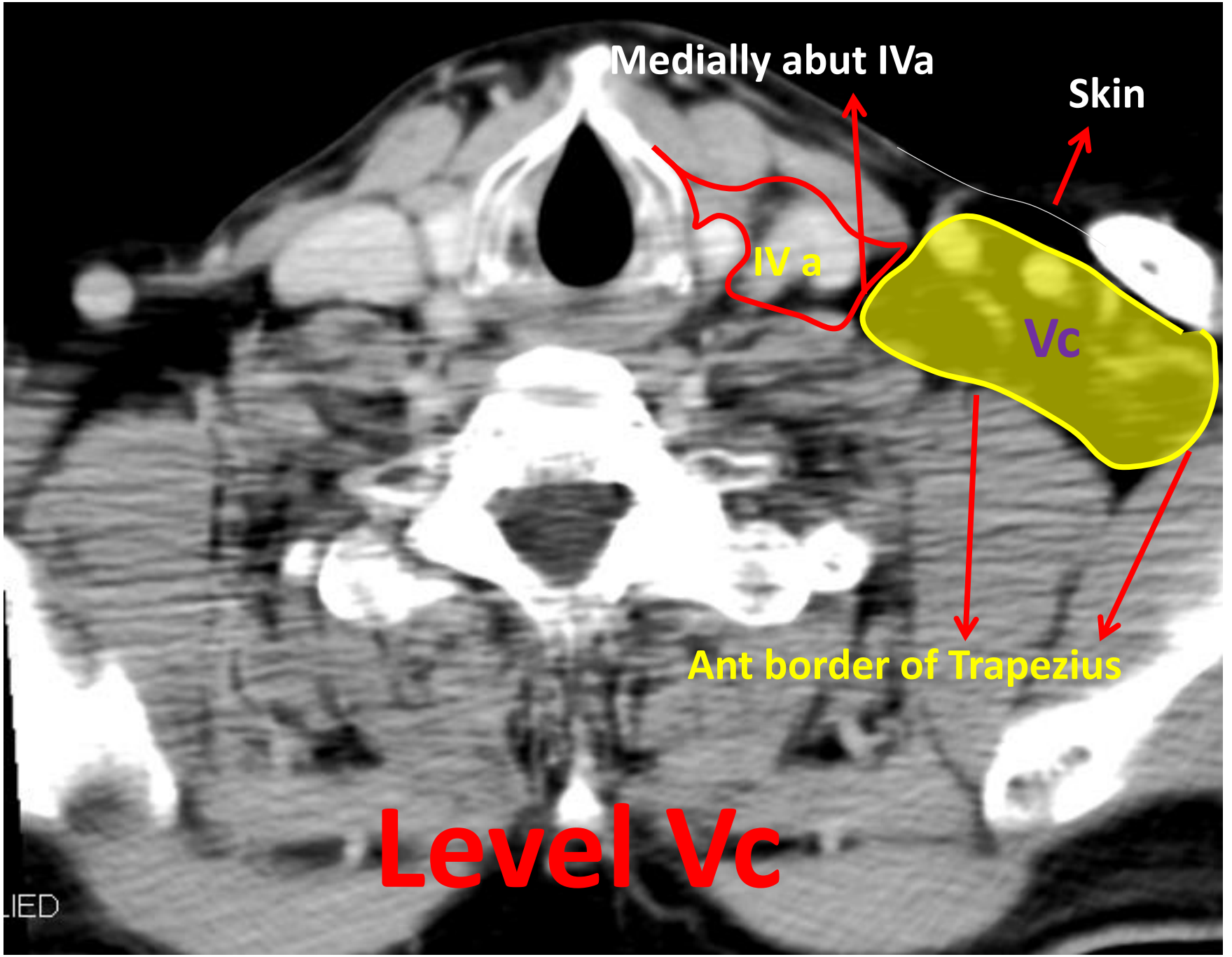


Continuation of Level V down

Lateral Supra clavicualar

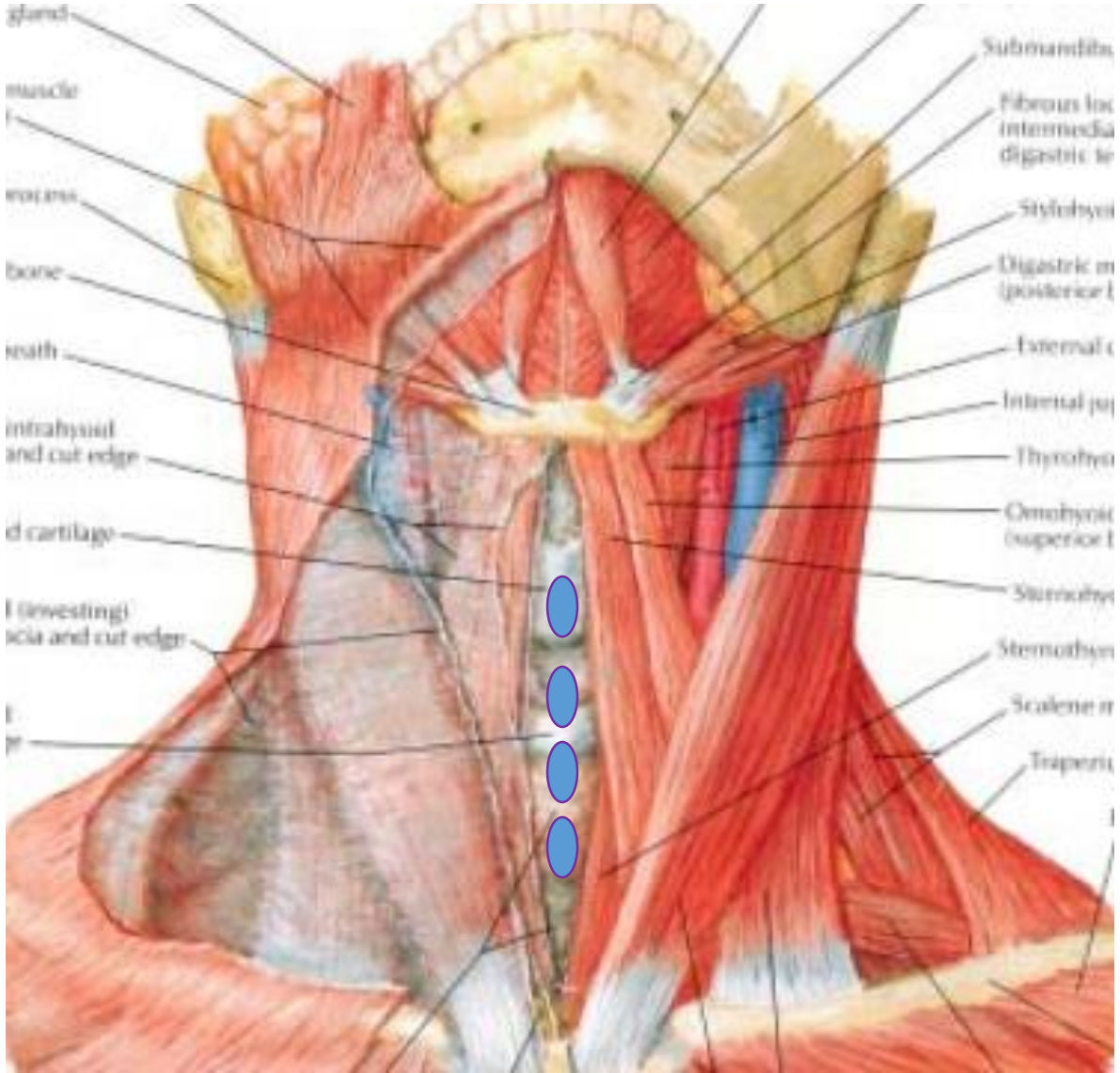
- Nasopharyngeal Ca
- Gross level V nodes

2 cm from M Sterni


Medially abut IVa
Skin
IV a
Vc
Ant border of Trapezius
Level Vc

Level VI

- Located in anterior neck compartment



VIa

Anterior Jugular Nodes

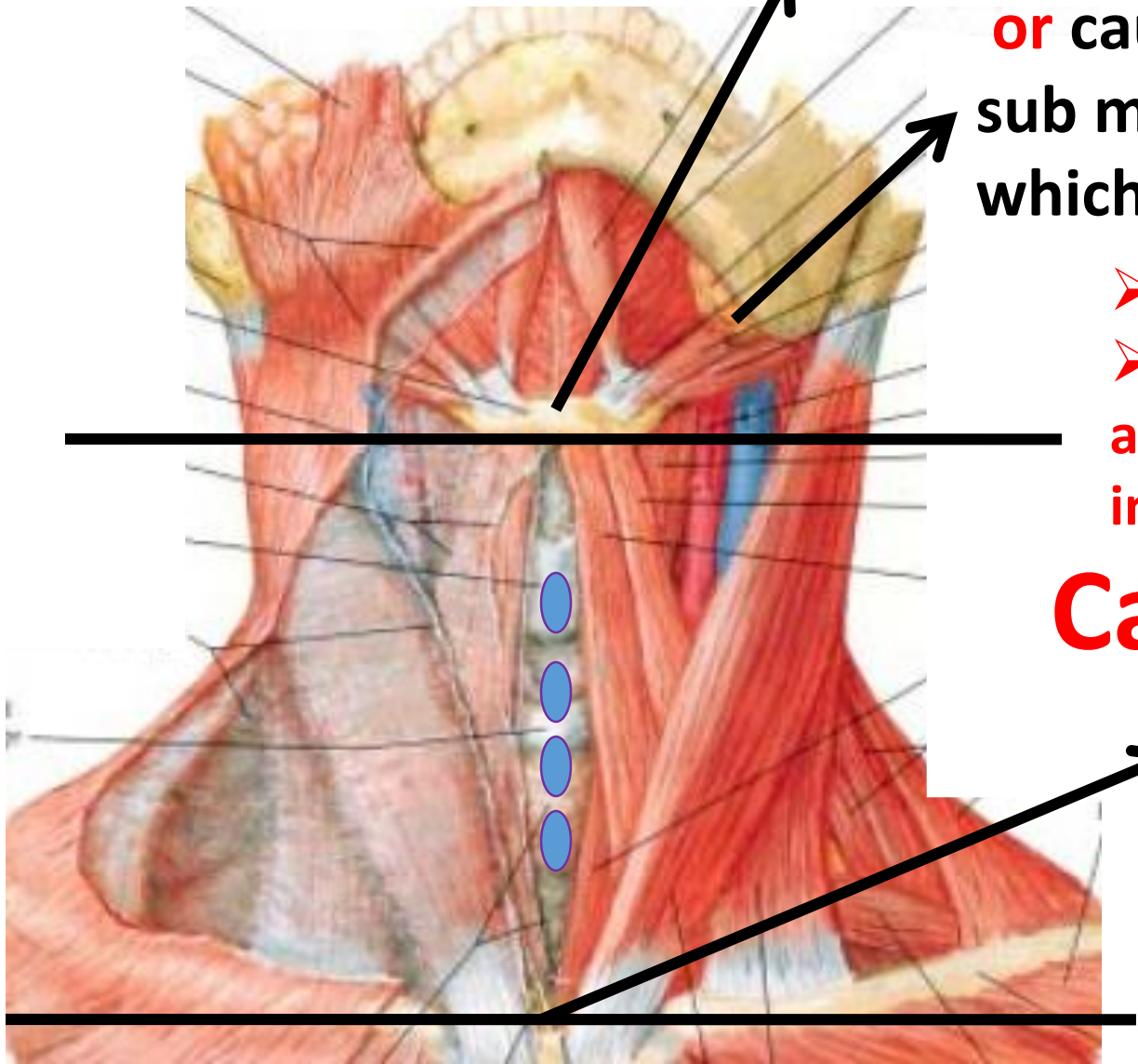
VIb

- Pre Laryngeal
- Pre-tracheal
- Para- tracheal (recurrent laryngeal nerve nodes)

Level VIa

Cranial

Caudal edge of the hyoid bone
or caudal edge of the
sub mandibular gland
whichever is more caudal

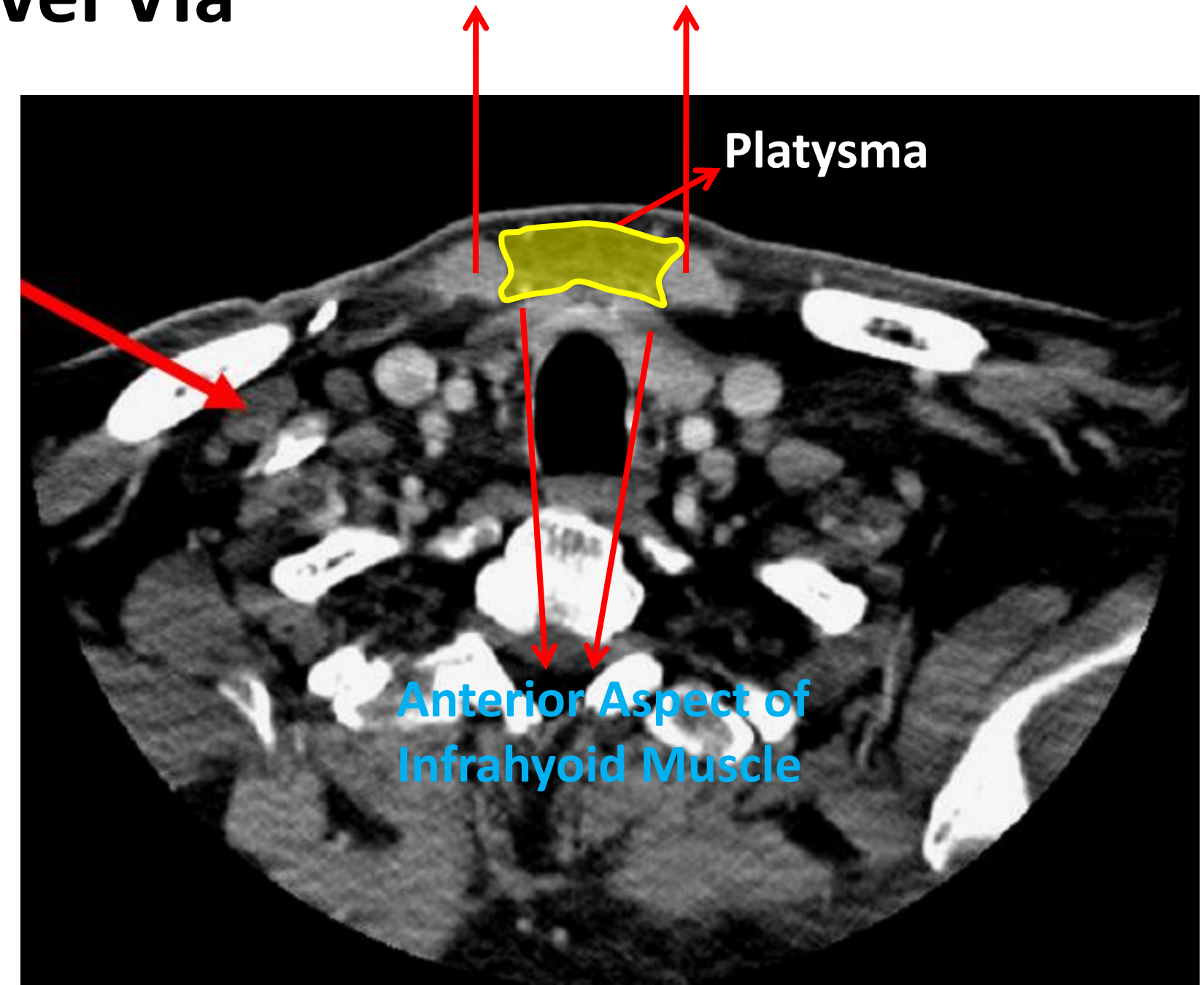


- Ca Lower Lip
- Advanced lower alveolus ca with invasion to chin

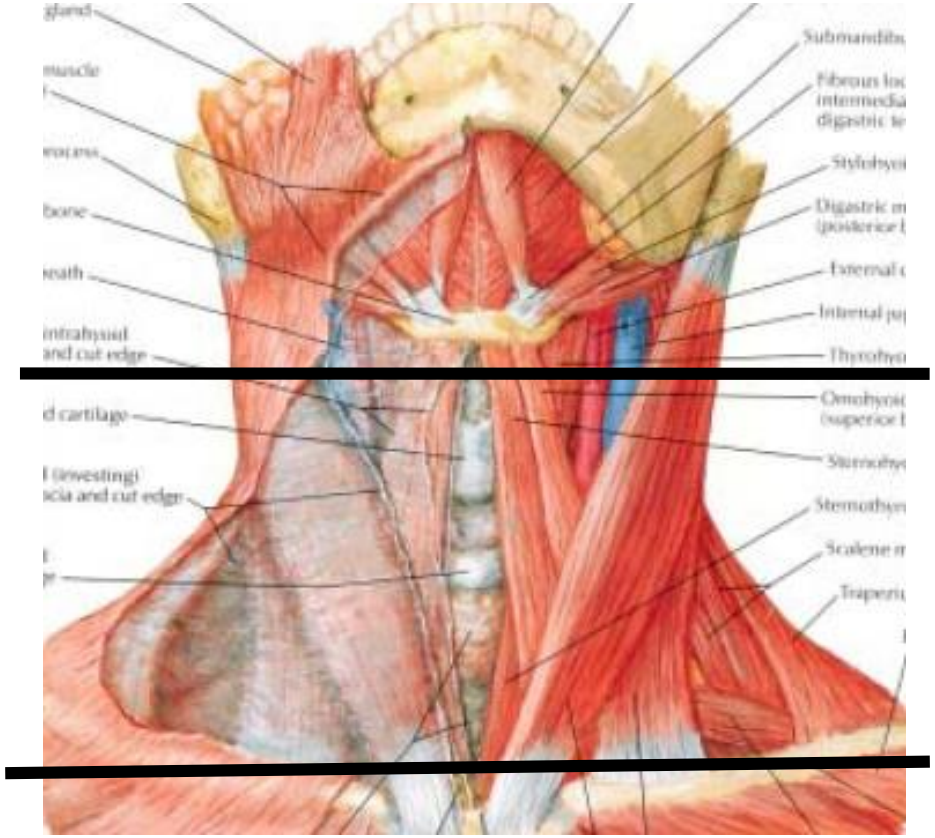
Caudal

Cranial edge of the
sternal Manubrium

Level VIa

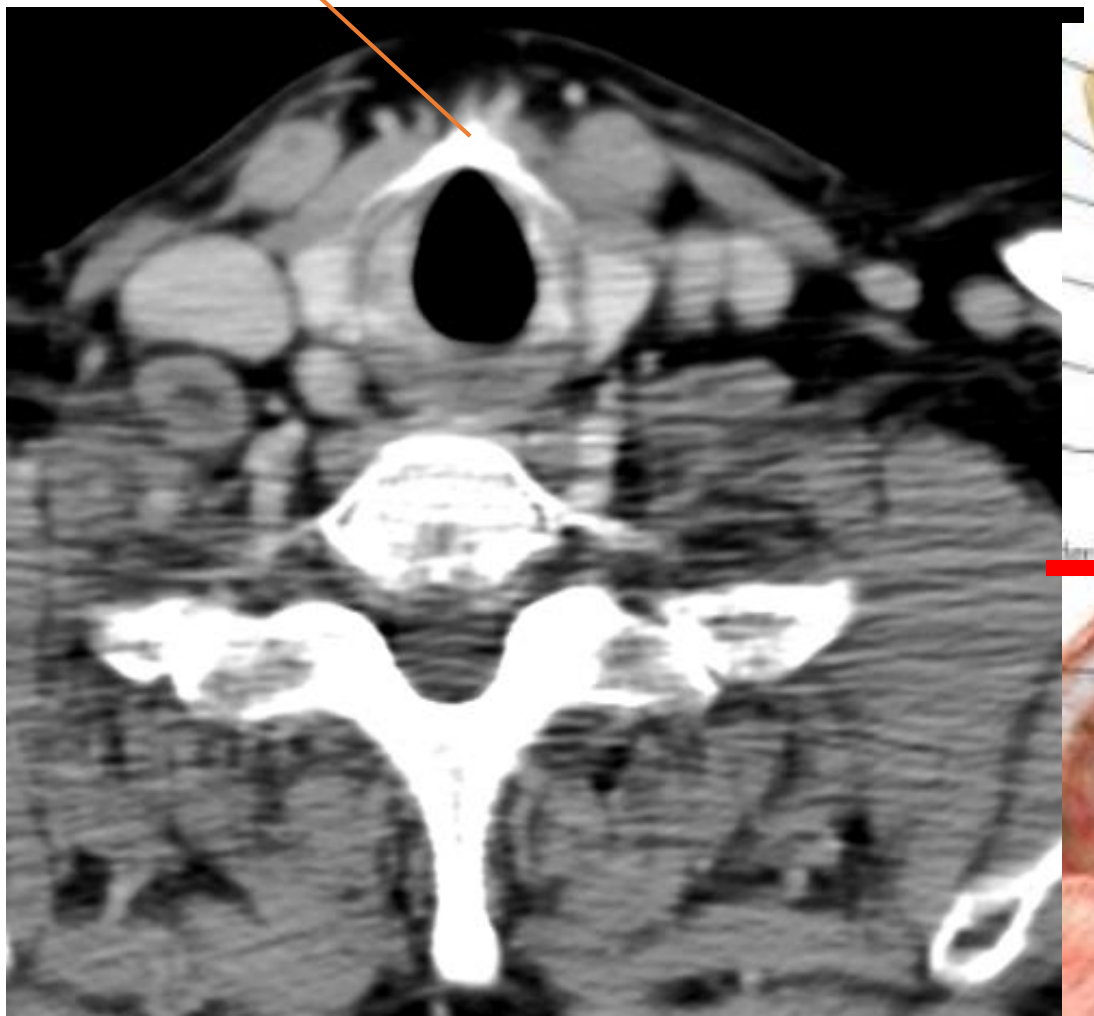

Between two Sterno cleidomastoid Muscle
Platysma
Anterior Aspect of
Infrahyoid Muscle

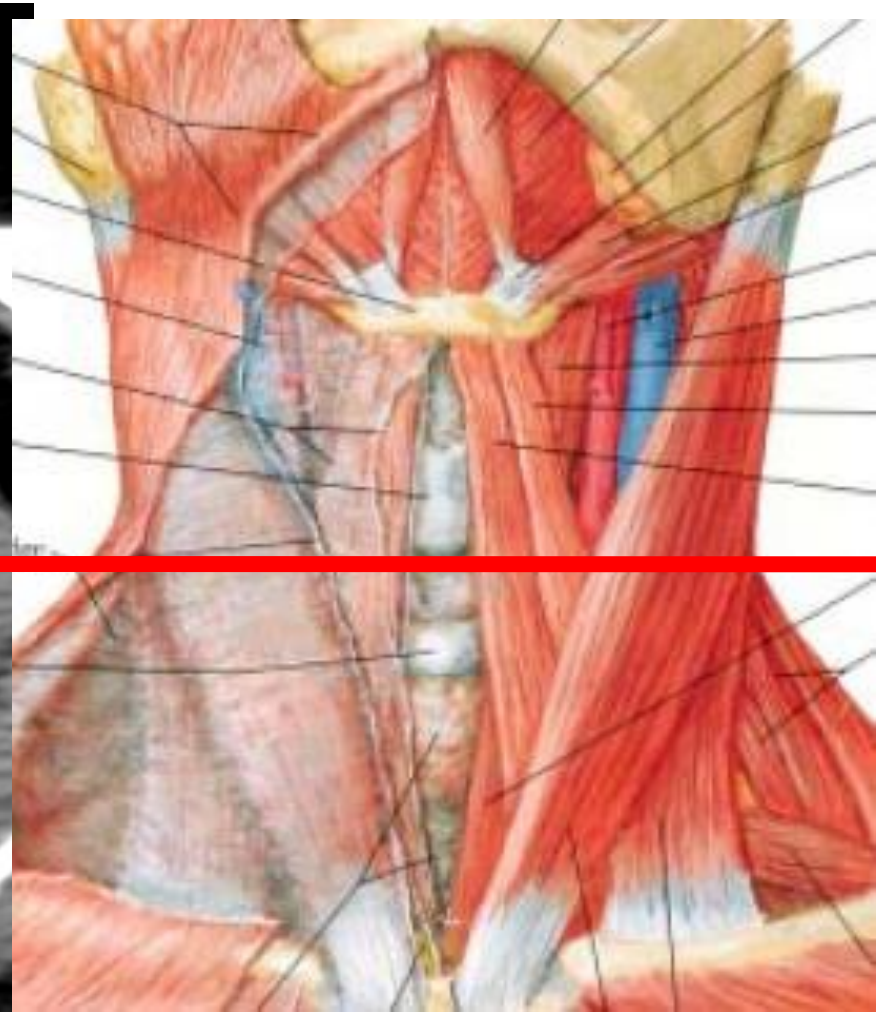
Contouring



Level VIb

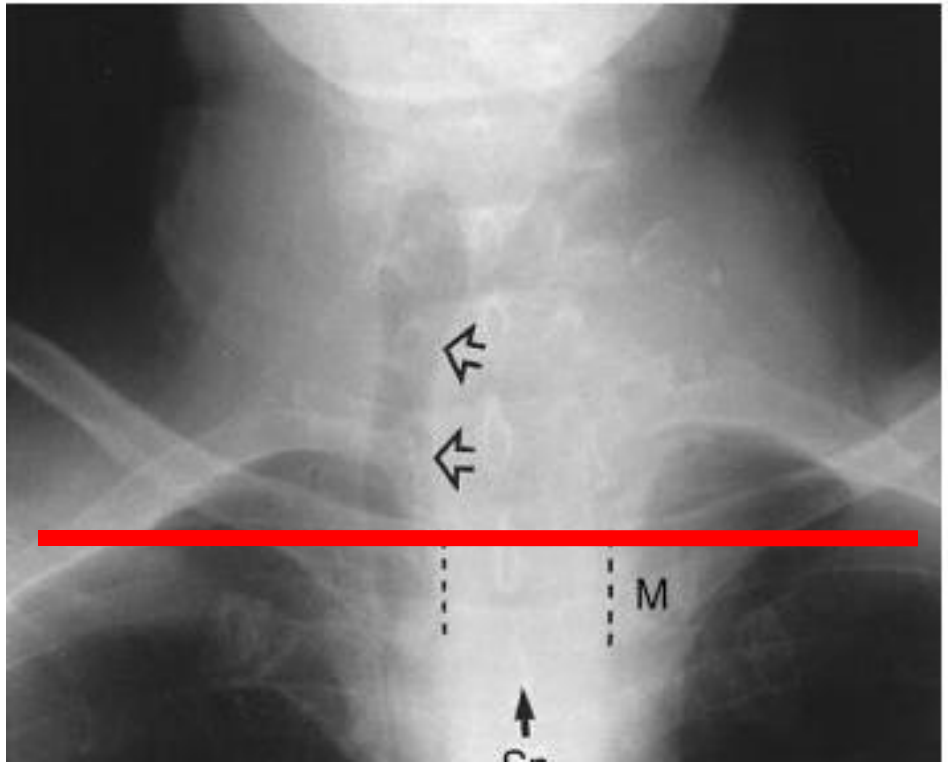
Cranial -> Caudal edge of the body of the thyroid cartilage,

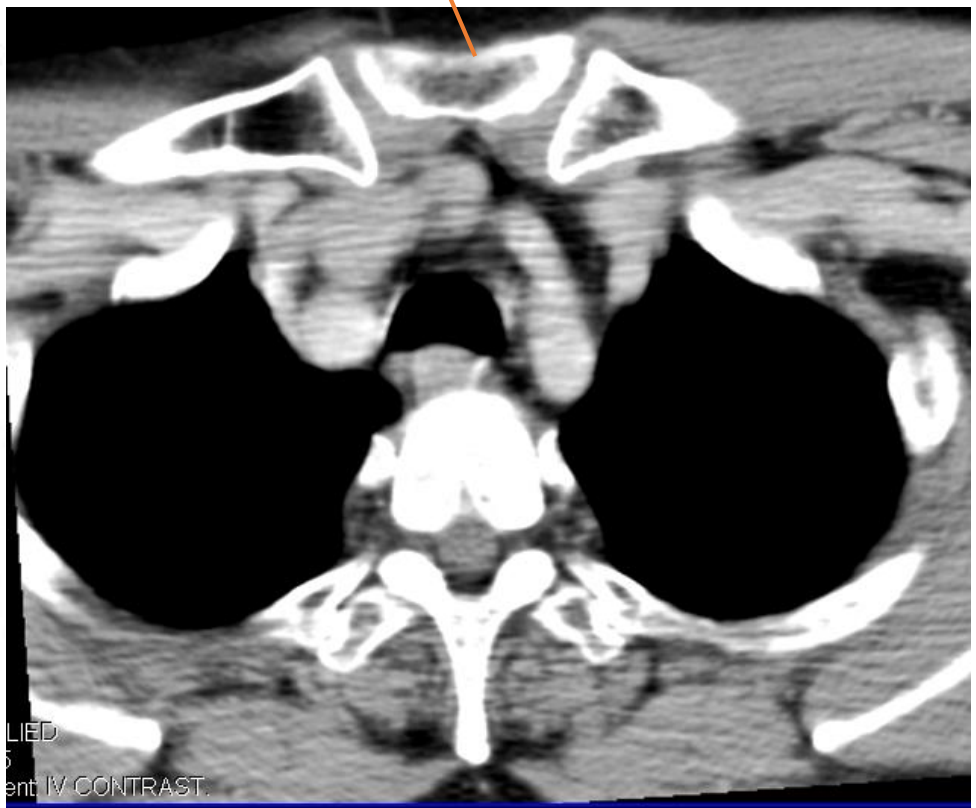




Level VIb

Caudal -> Cranial edge of the sternum manubrium



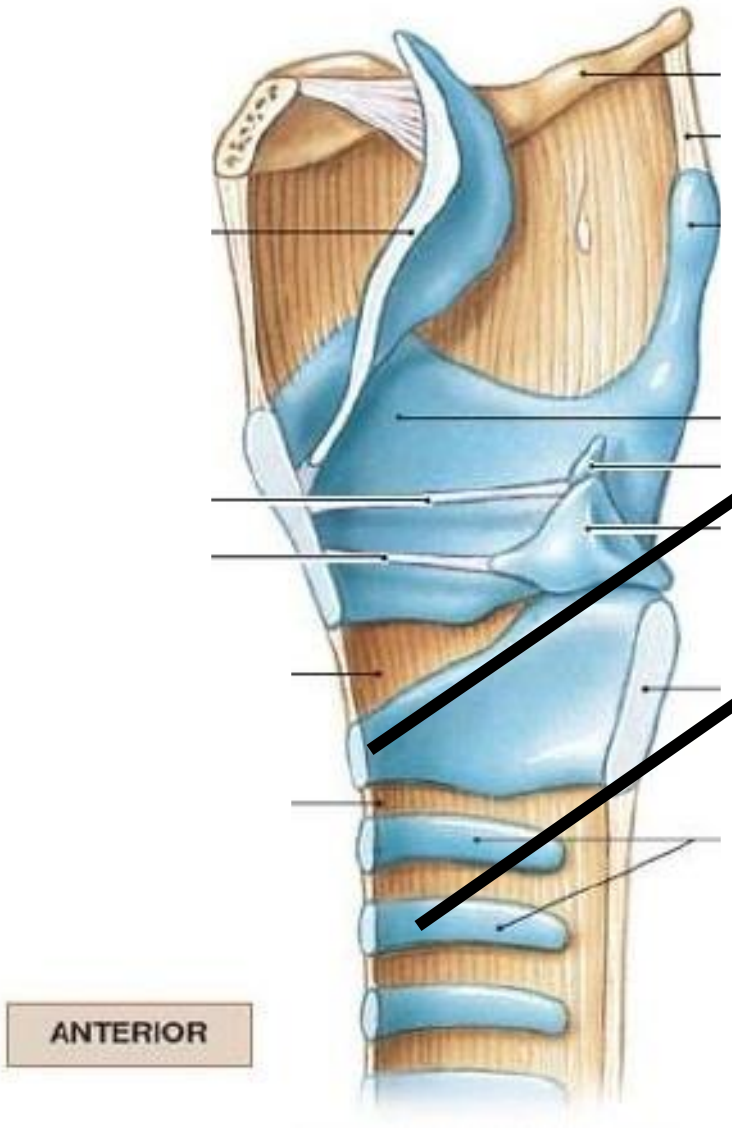


Level VIb Posterior Aspect of Infra hyoid Muscle

Anterior

Level VIb

Posterior



Anterior aspect of the respiratory tract

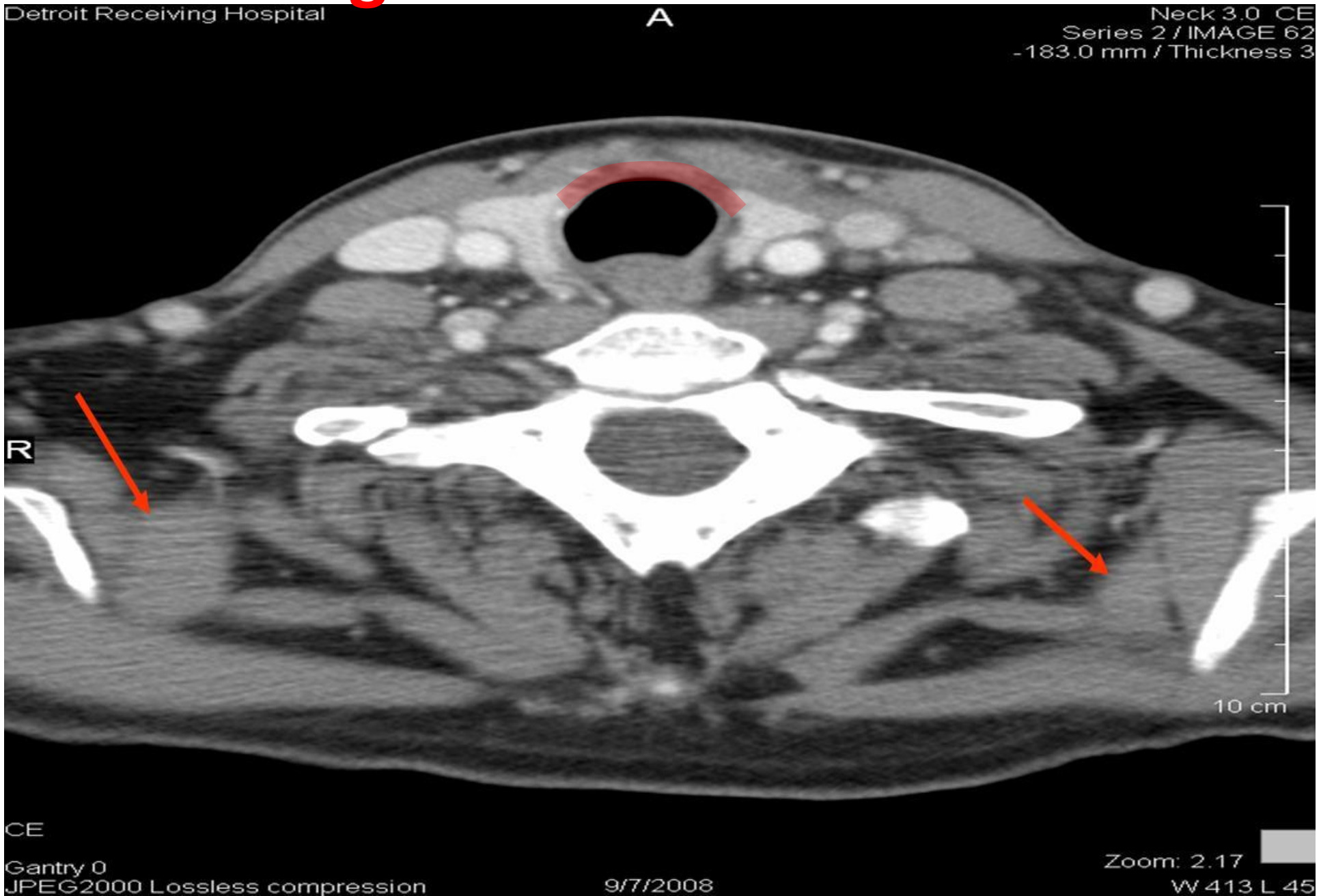
Cricoid

Pre laryngeal

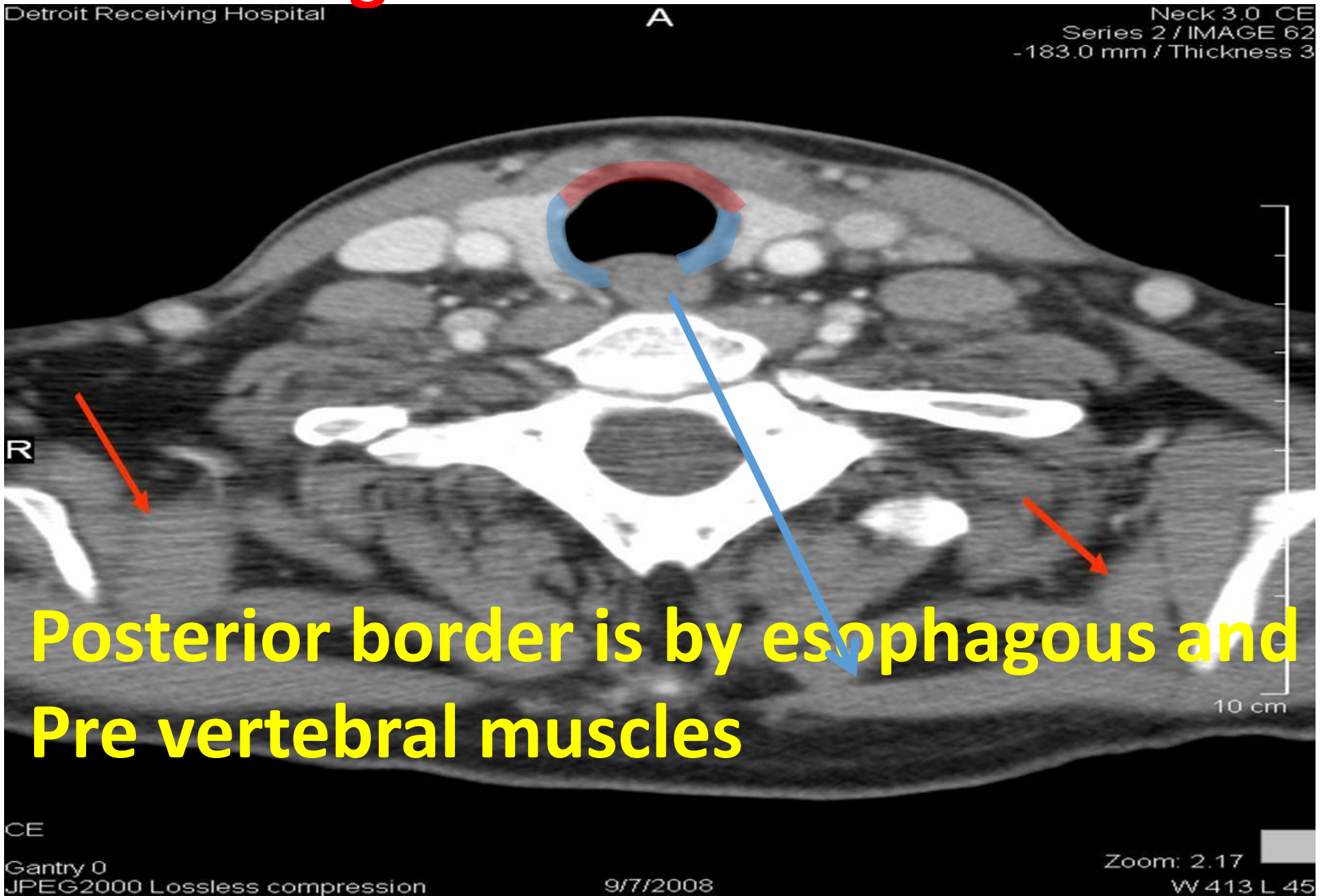
Tracheal rings

Pre tracheal

Contouring Pre tracheal Level VIb



Contouring Para tracheal Level VIb



Contouring

Primary for Level VI

Cervical esophagus

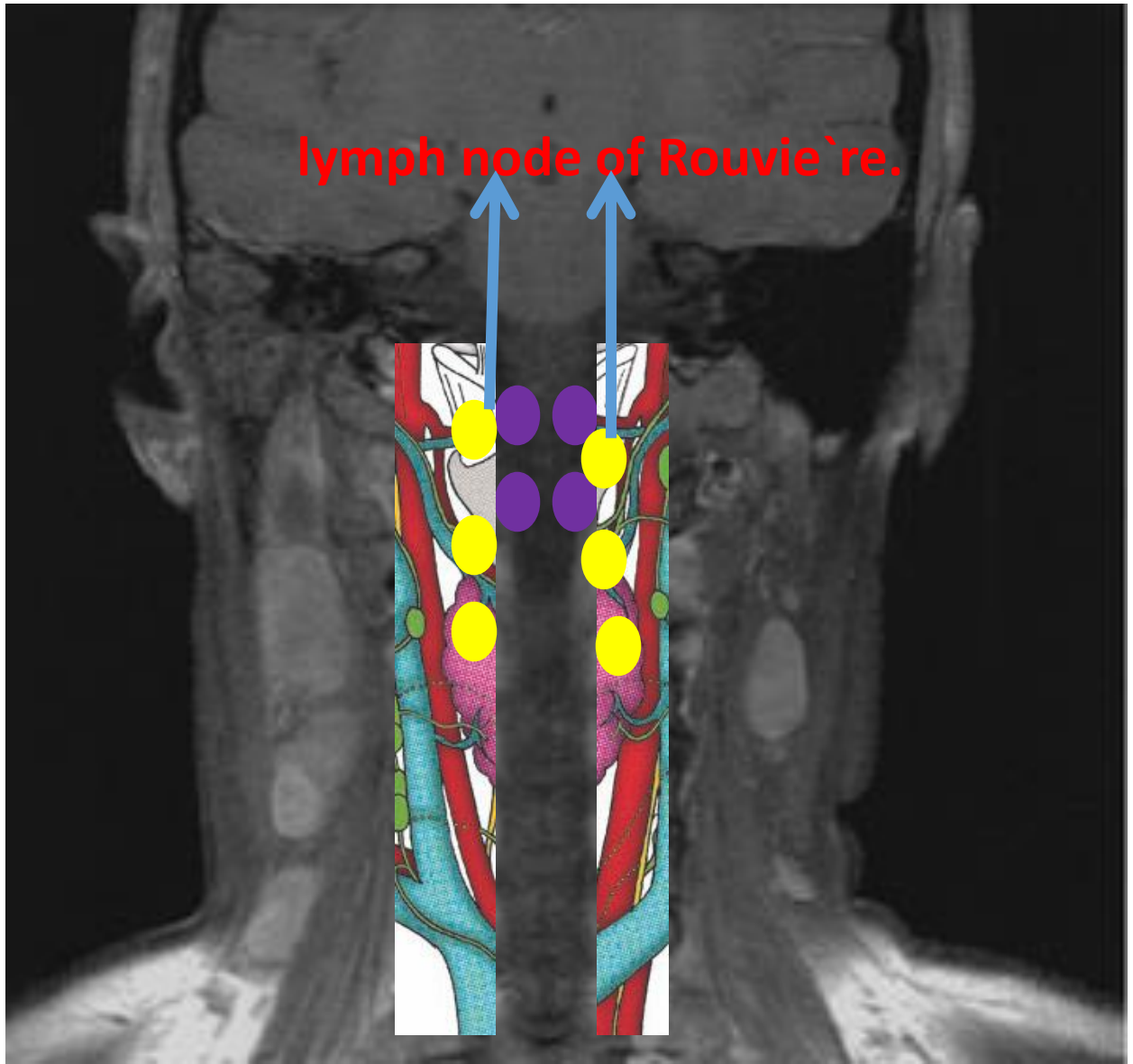
Apex of pyriform sinus

Thyroid ca

Transglottic extension

Subglottic extension

RP Nodes (Level VIIa)

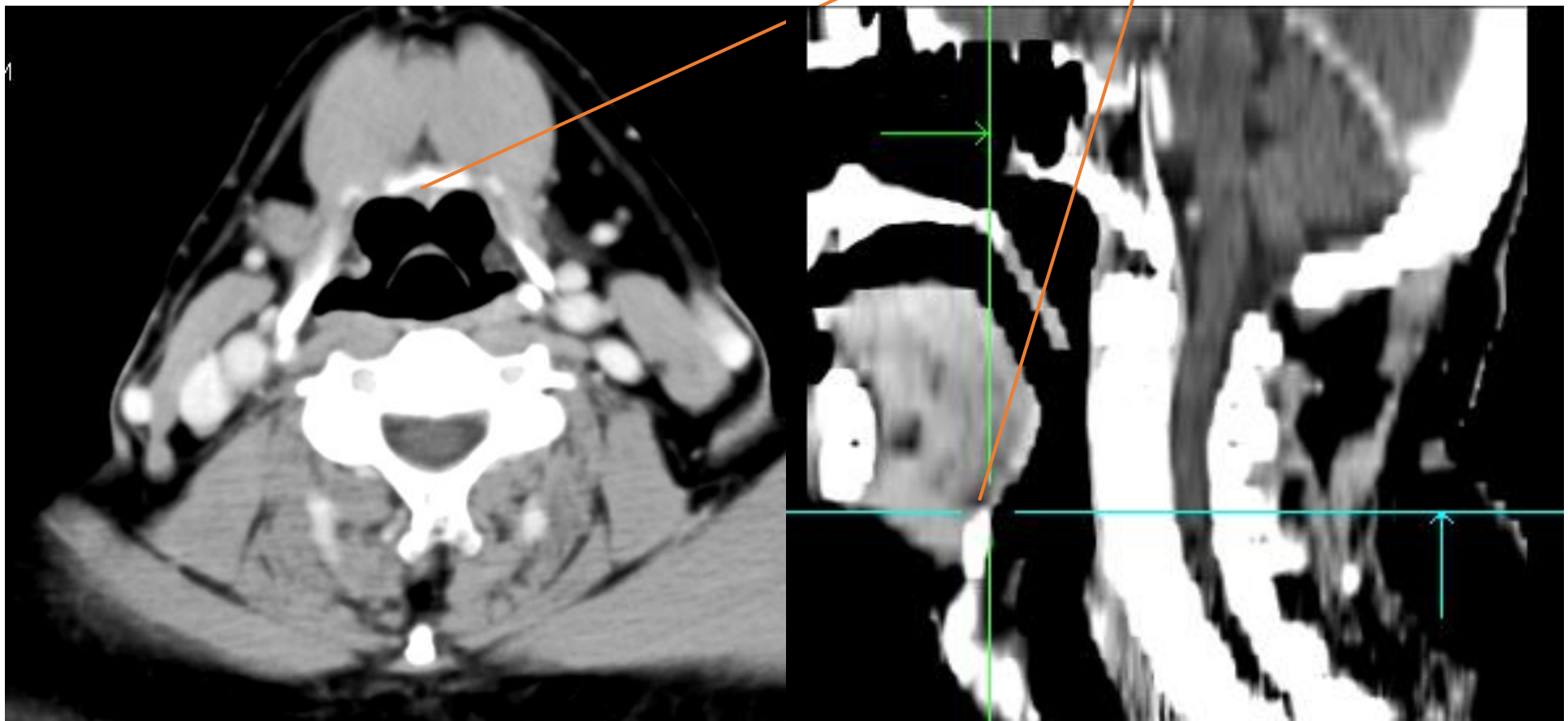


- Typically, retropharyngeal nodes are divided into
  - Medial Group
  - Lateral Group.

- The medial group is an inconsistent group which consist of one to two lymph nodes
- The lateral group lies medial to the carotid artery.
- The most superior lymph node of this group is also called the lymph node of Rouvie`re.

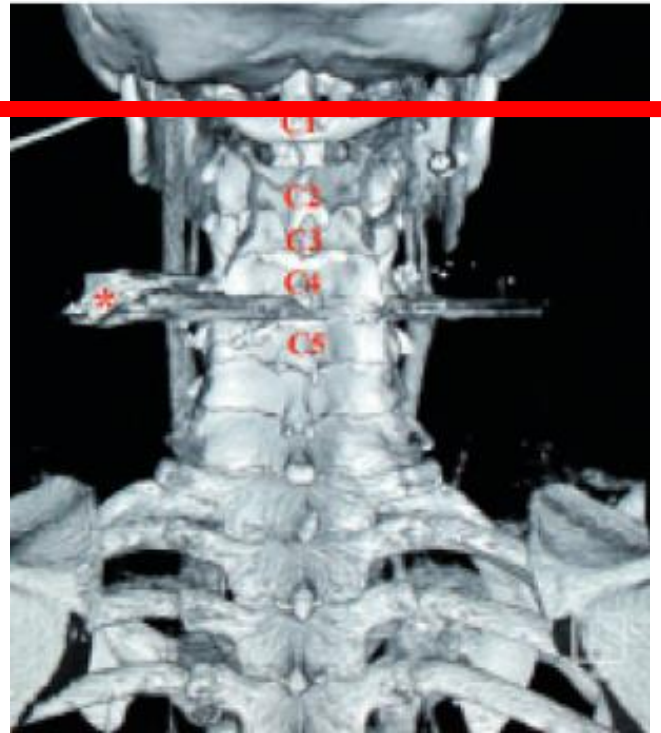
Level VIIa RP nodes

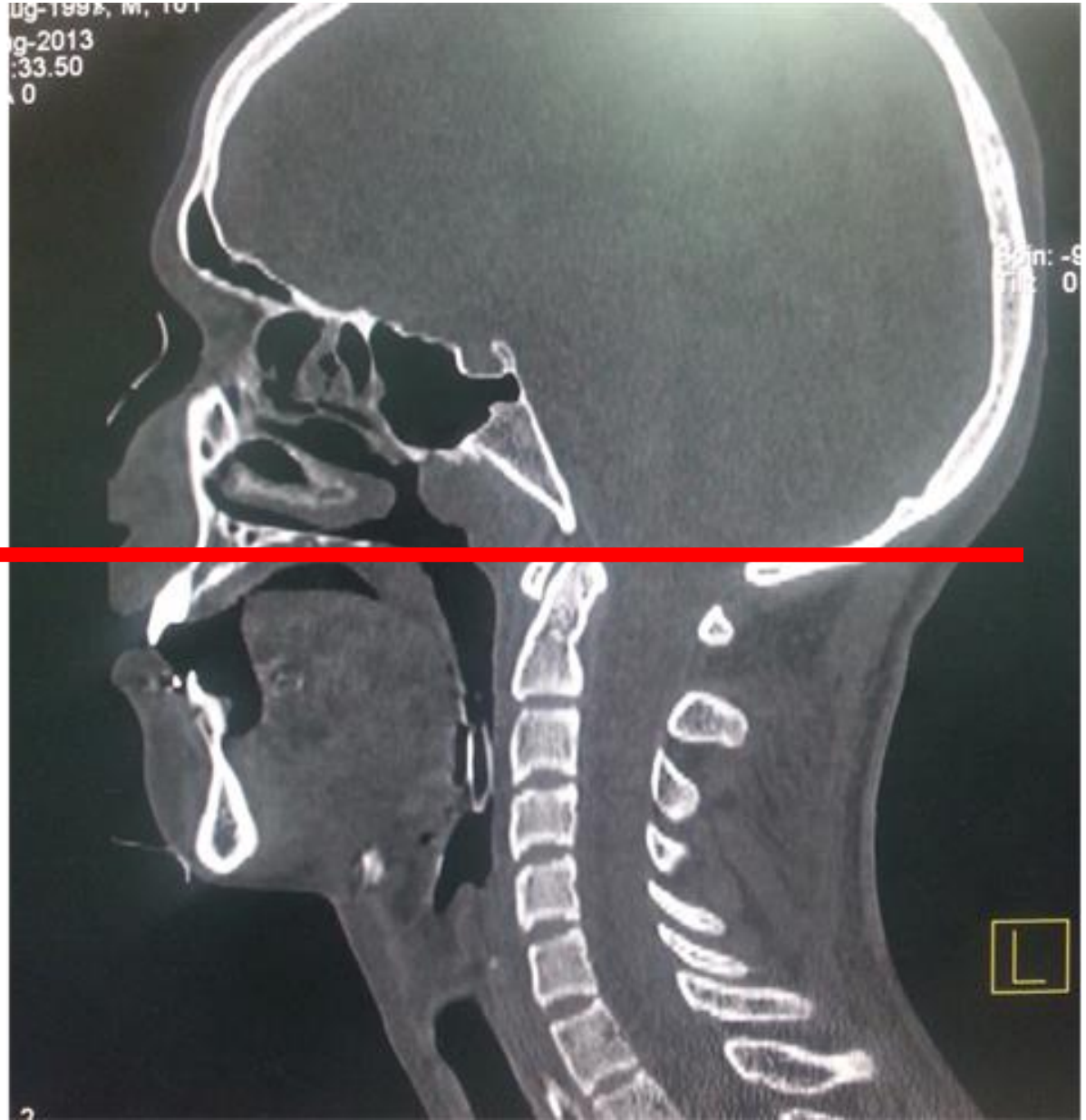
Caudal -> Cranial edge of the body of the hyoid bone



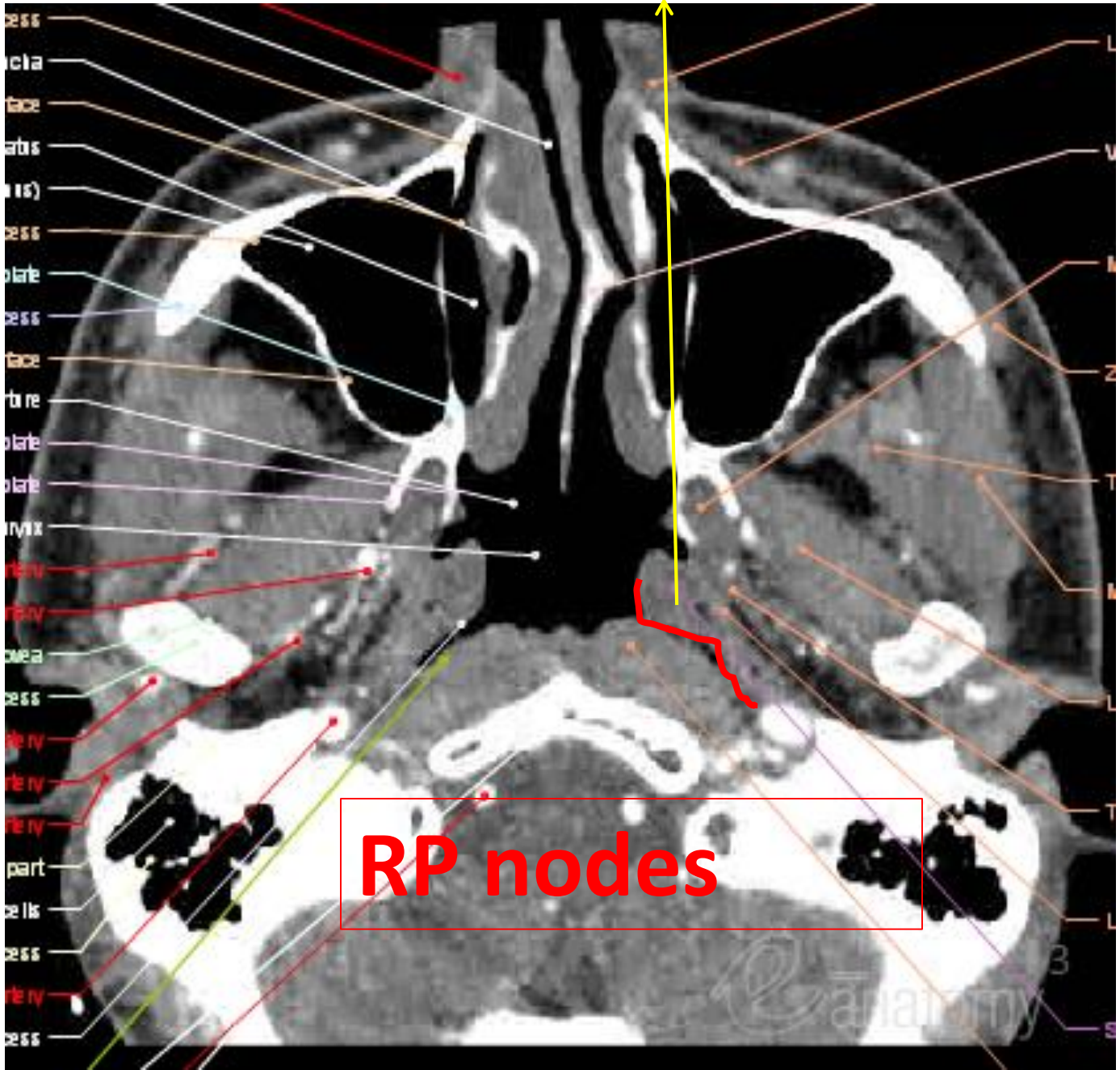
Level VIIa RP nodes

Cranial-> upper edge of the body of first cervical vertebra

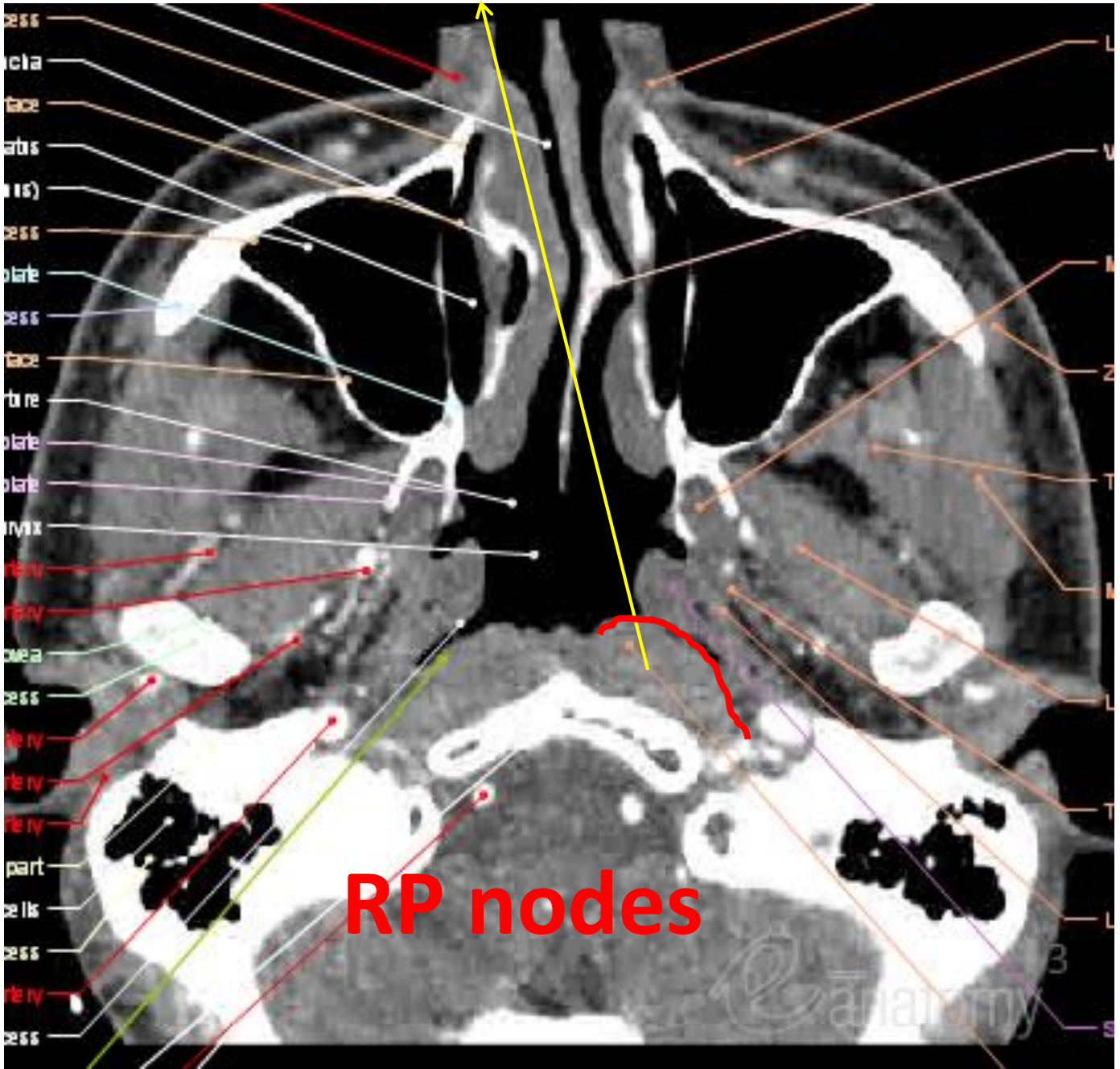




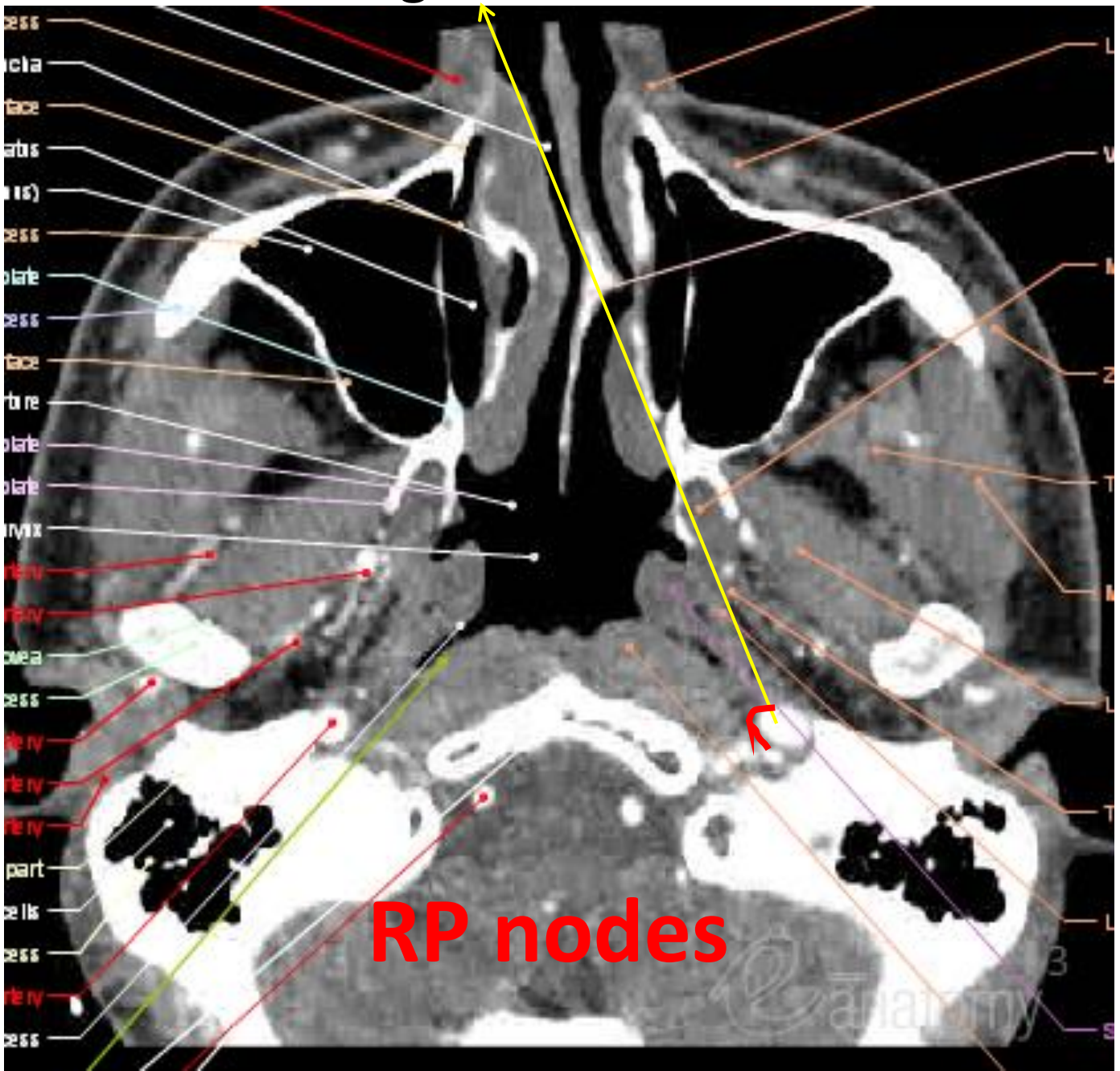
Anterior-> Levator Veli palatini muscle.



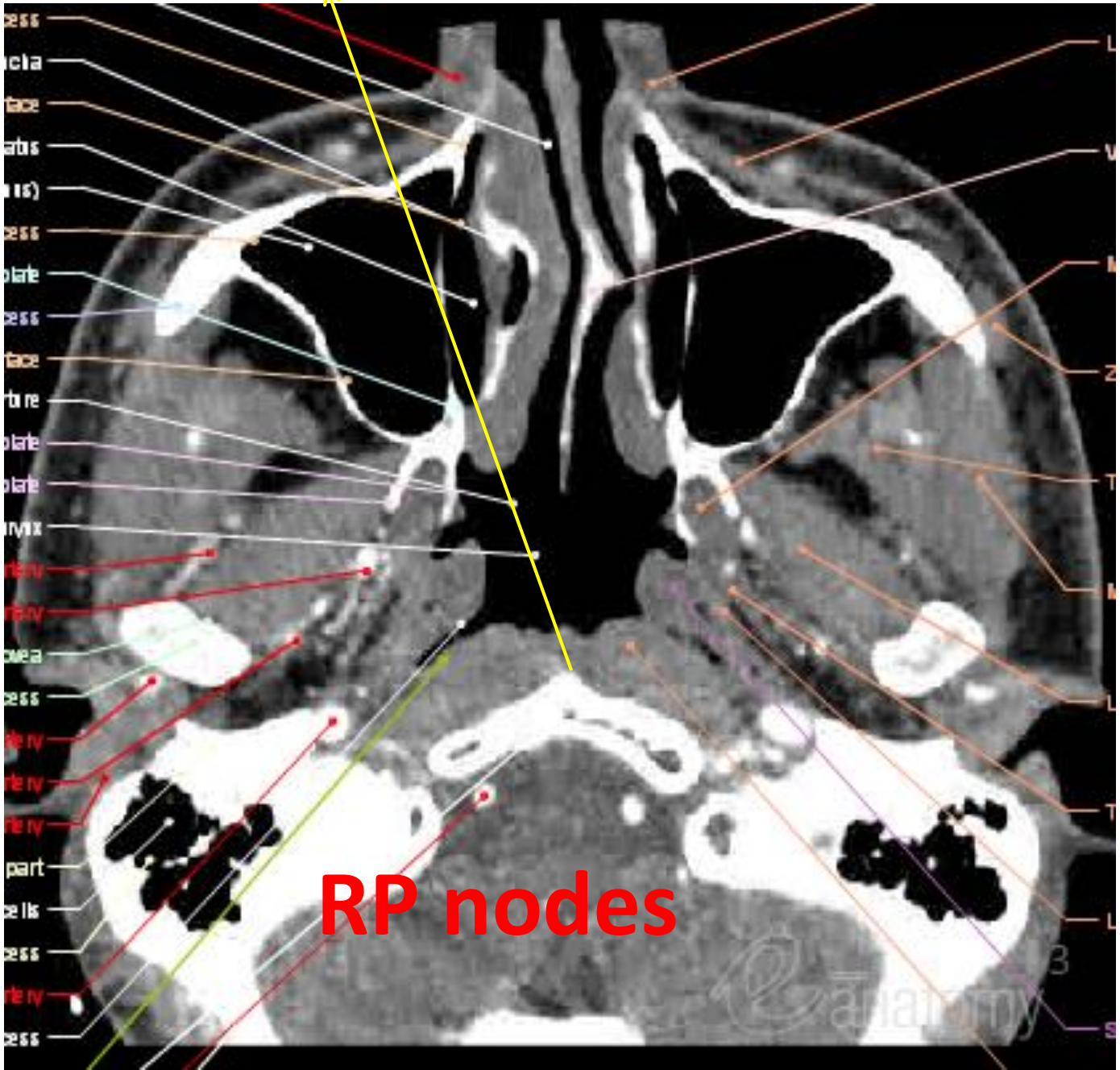
Posterior-> Pre-vertebral Muscles. .

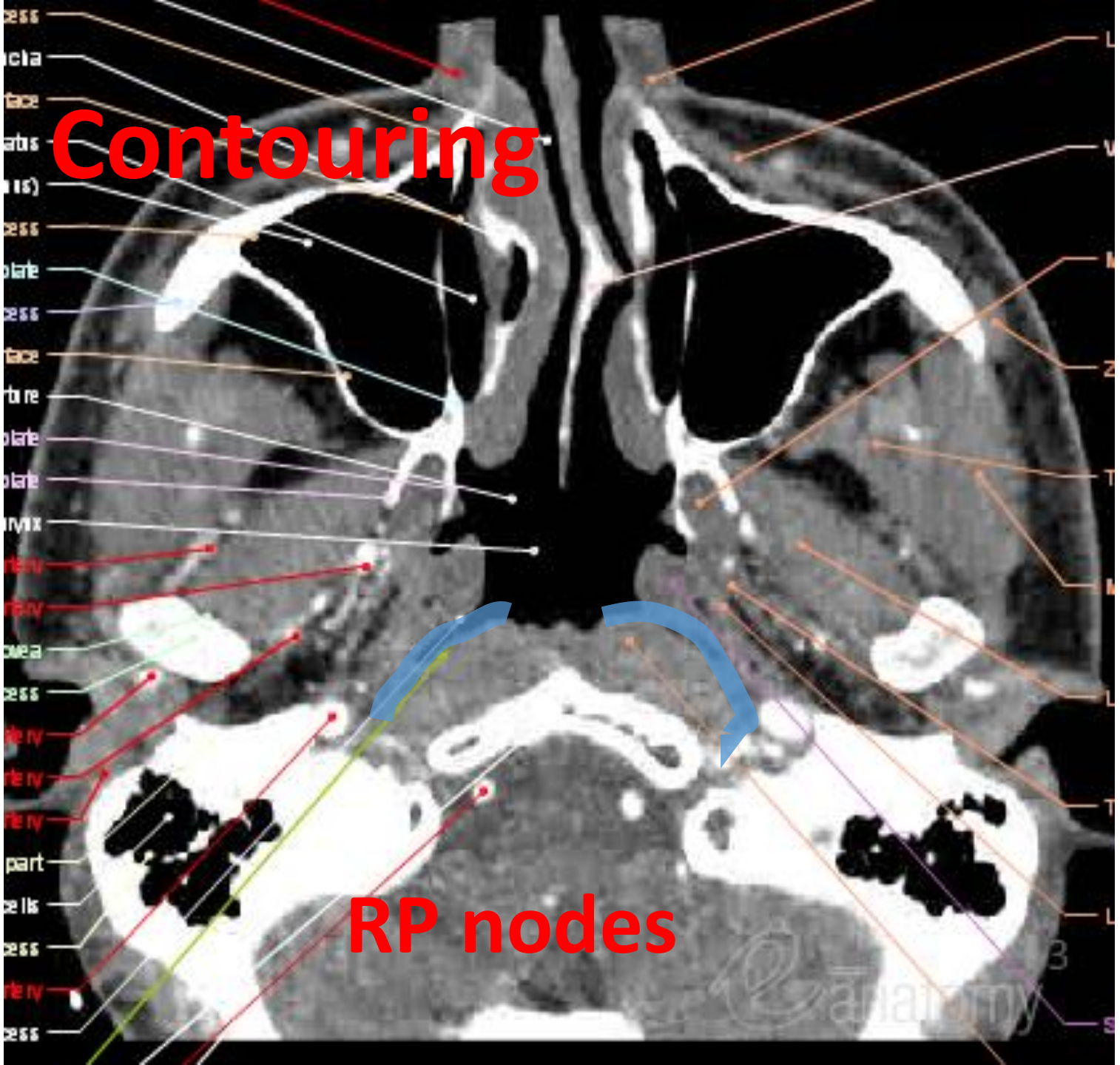


Lateral-> **Medial edge of the carotid vessel.**



Medial-> Midline




Contouring
RP nodes

Primary for Level VIIa

- **Nasopharynx**
- **Tonsillar fossa**
- **Soft Palate**
- **Post Pharyngeal wall**

Level VIII.

Boundaries	Level VIII (parotid node group)
Cranial	Zygomatic arch, external auditory canal
Caudal	Angle of the mandible
Anterior	Posterior edge of mandidular ramus & posterior edge of masseter m. (laterally) medial pterygoid muscle (medially)
Posterior	Anterior edge of sternocleidomastoid m. (laterally), posterior belly of digastric m. (medially)
Lateral	SMAS layer in sub-cutaneous tissue
Medial	Styloid process and styloid m.

Level Xb (occipital nodes)
External occipital protuberance
Cranial border of level V
Posterior edge of sternocleidomastoid m.
Anterior (lateral) edge of trapezius m.
Sub-cutaneous tissue
Splenius capitis m.

Level IX.

Boundaries	Level IX (bucco-facial group)
Cranial	Caudal edge of the orbit
Caudal	Caudal edge of the mandible
Anterior	SMAS layer in sub-cutaneous tissue
Posterior	Anterior edge of masseter m. & corpus adiposum buccae (bichat's fat pad)
Lateral	SMAS layer in sub-cutaneous tissue
Medial	Buccinator m.

Boundaries	Level Xa (retroauricular nodes)
Cranial	Cranial edge of external auditory canal
Caudal	Tip of the mastoid
Anterior	Anterior edge of the mastoid (caudally)/posterior edge of the external auditory canal (cranially)
Posterior	Anterior border of occipital nodes – posterior edge of sternocleidomastoid m.
Lateral	Sub-cutaneous tissue
Medial	Splenius capitis m. (caudally)/temporal bone (cranially)

N +ve Neck

What is positive neck node?

SIZE

Smallest Transverse diameter

Level I,II	>12-15mm
Level III to VI	> 10mm
Leve; VII	> 5-8 mm

HETROGENEITY

Central Region hypodense,
T1-Weighted hypointensity
T2-Weighted hyperintensity

NECROSIS ⟶ METASTASIS

CLUSTERS

Three or more contiguous ill defined nodes with 6-8mm size present together

SHAPE

Normal-------Bean or Elliptical.

Abnormal----------Round

Consensus at 43rd meeting of ASTRO, San Fransisco,2001

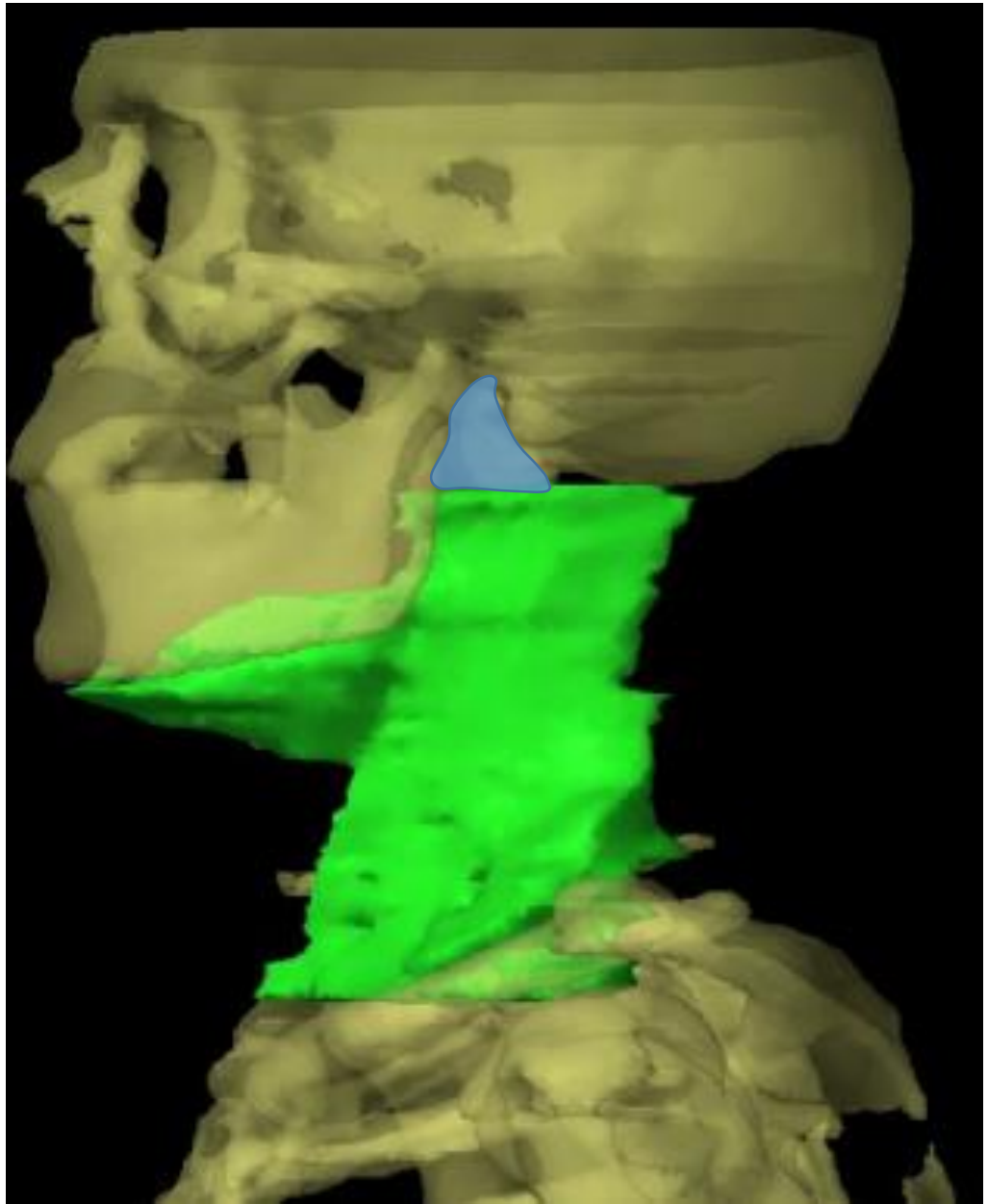
Changes in contouring for +ve Neck

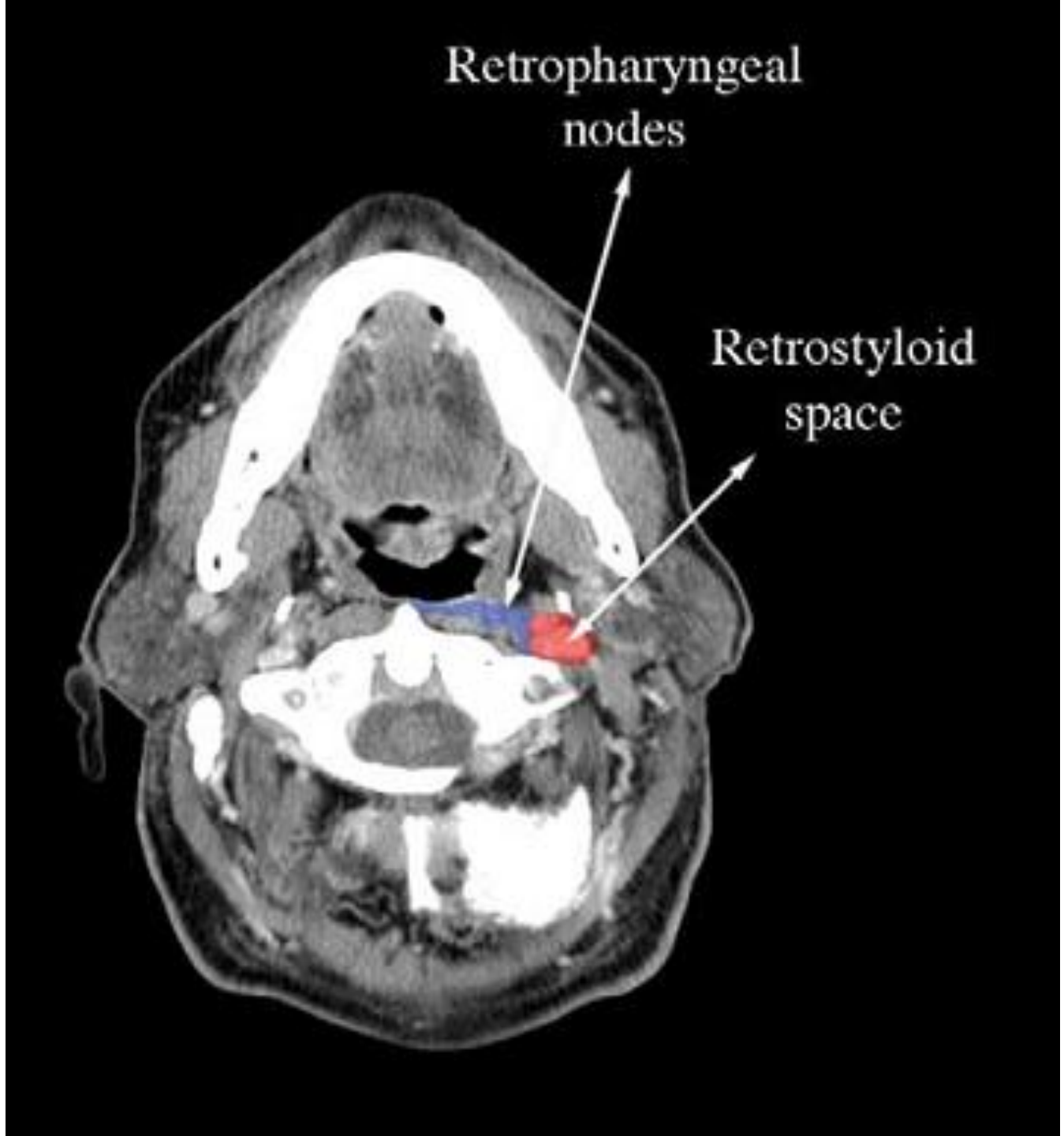
- **Extent of contouring to be increased**
- **Extra Capsular Extension to be taken into account.**
- **Node infiltrating the muscle.**
- **CTV margin**
- **Junction Nodes**

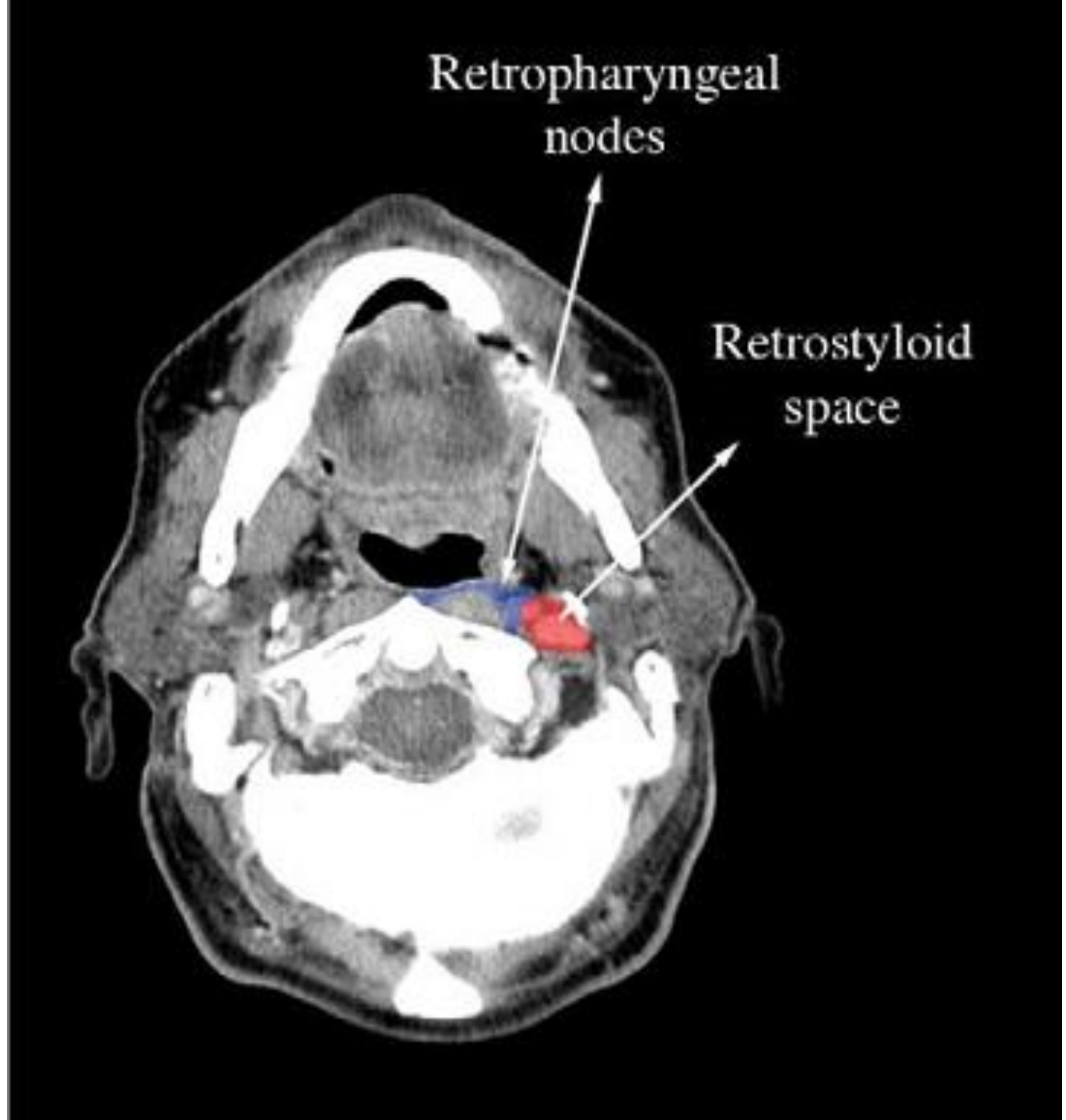
Extent of contouring to be increased

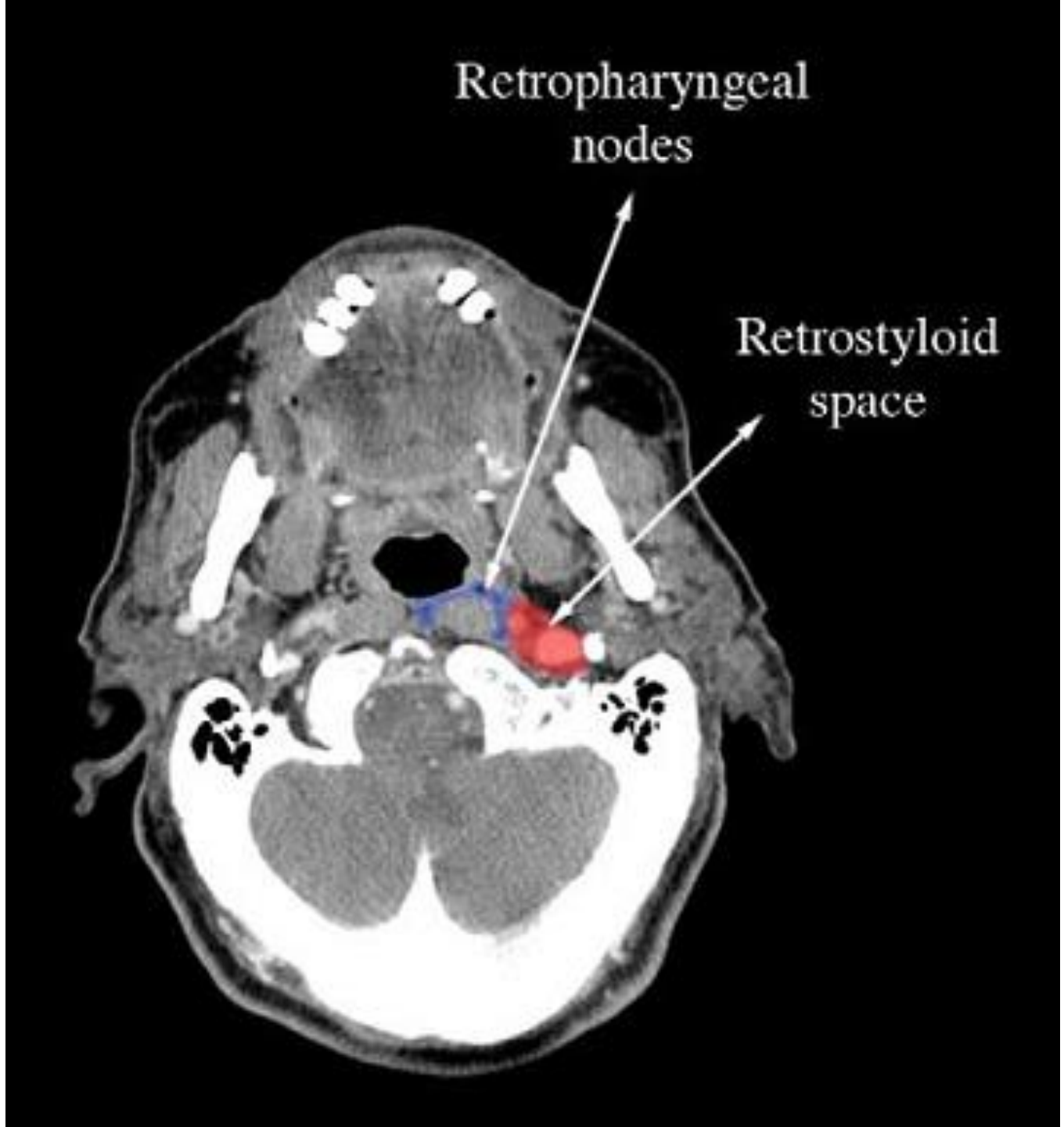
Level II is Enlarged

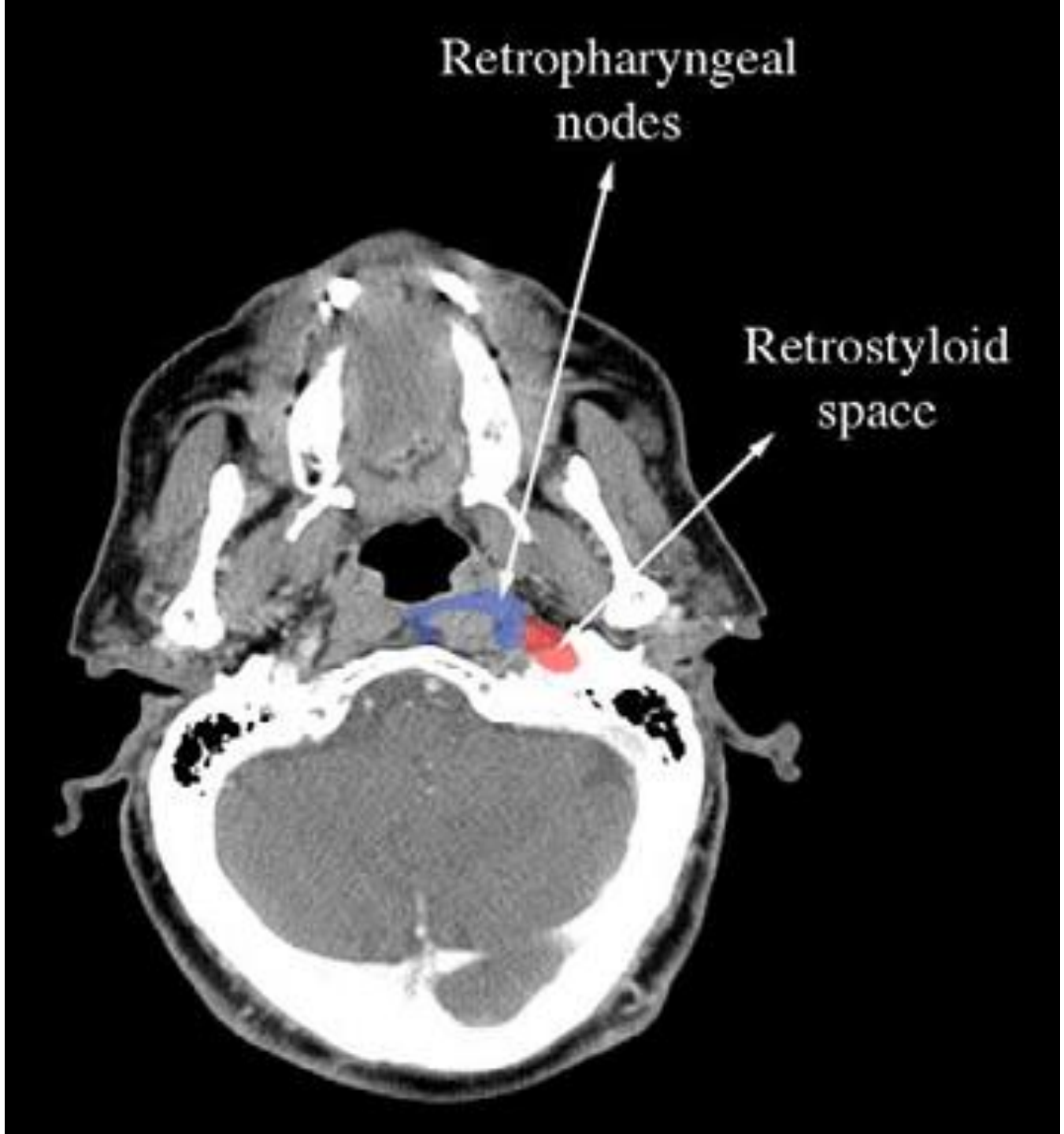
- **Extend level II cranially up to jugular foramina i.e. Retrostyloid region is included on the side of involvement**




Retropharyngeal
nodes
Retrostyloid
space


Retropharyngeal
nodes
Retrostyloid
space

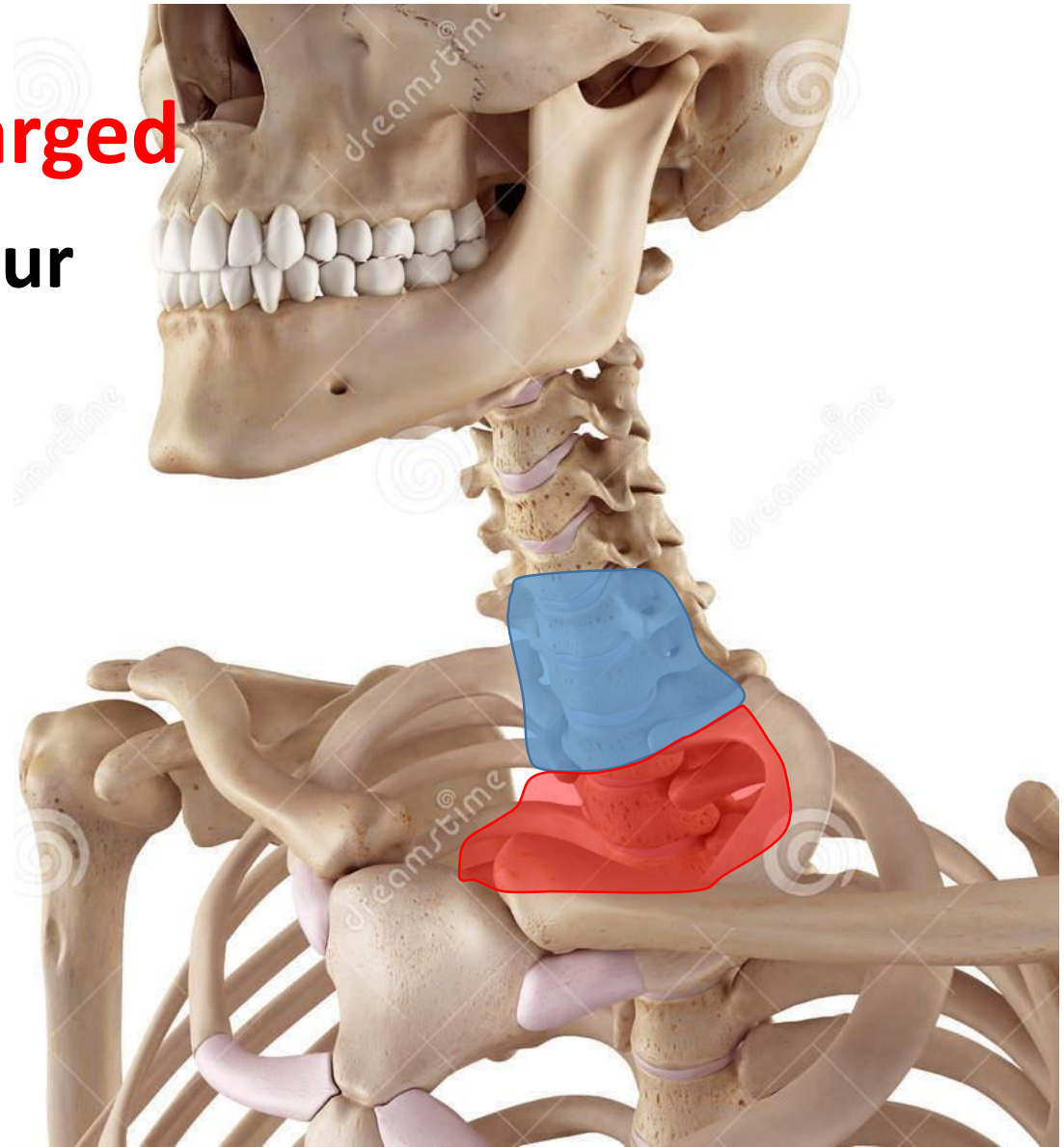

Retropharyngeal
nodes
Retrostyloid
space

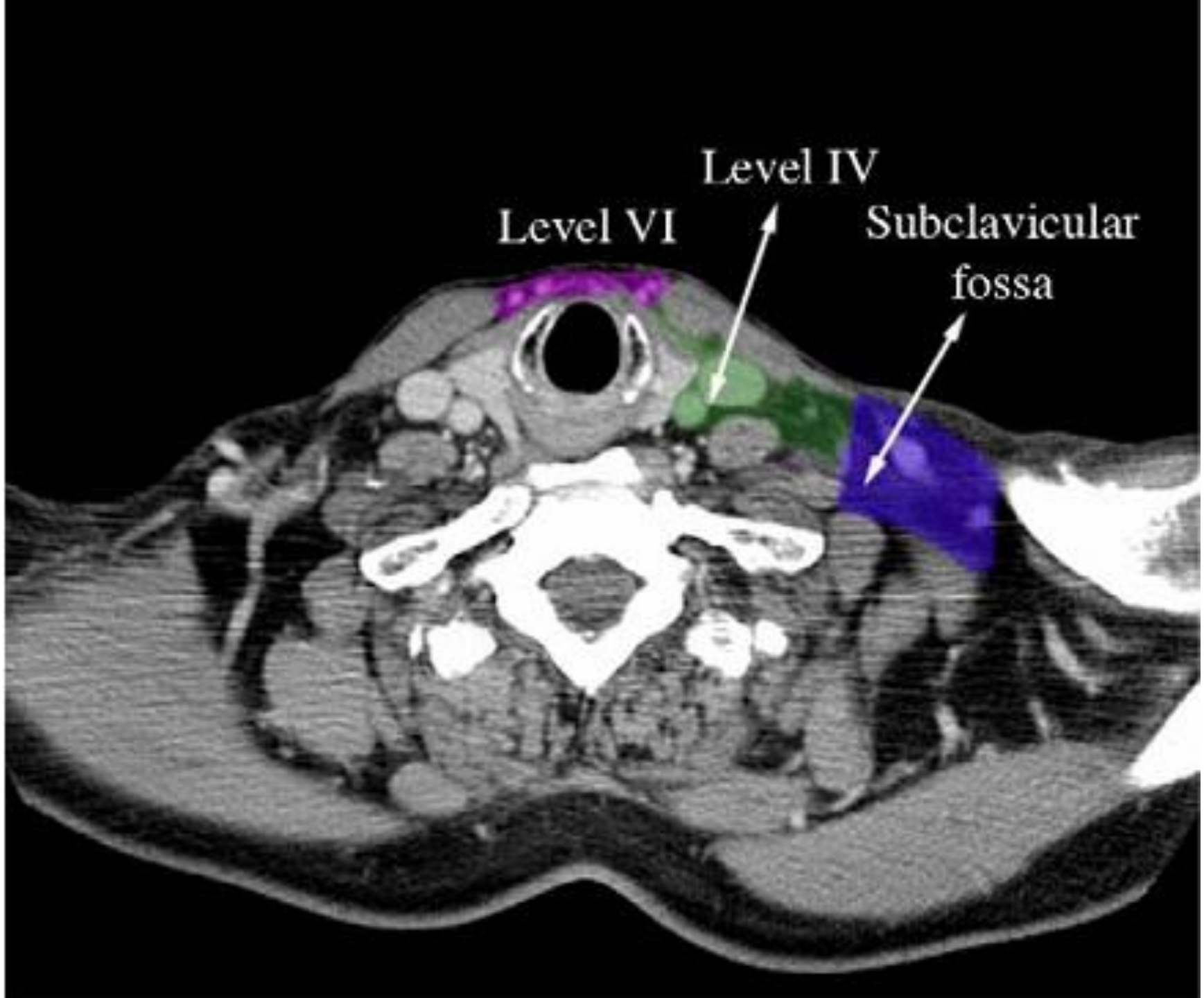

Retropharyngeal
nodes
Retrostyloid
space

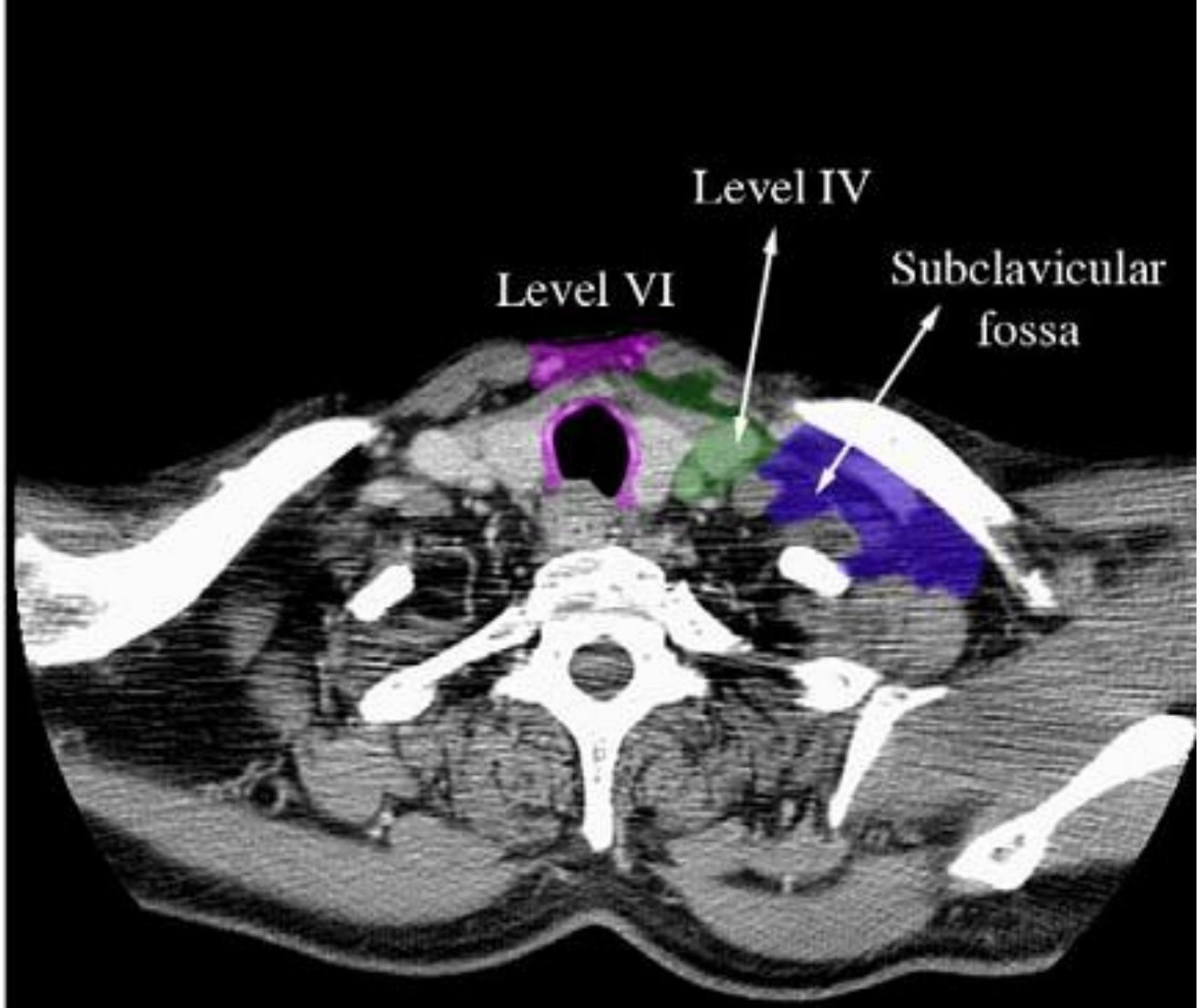
Extent of contouring to be increased

Level IVa or V is Enlarged

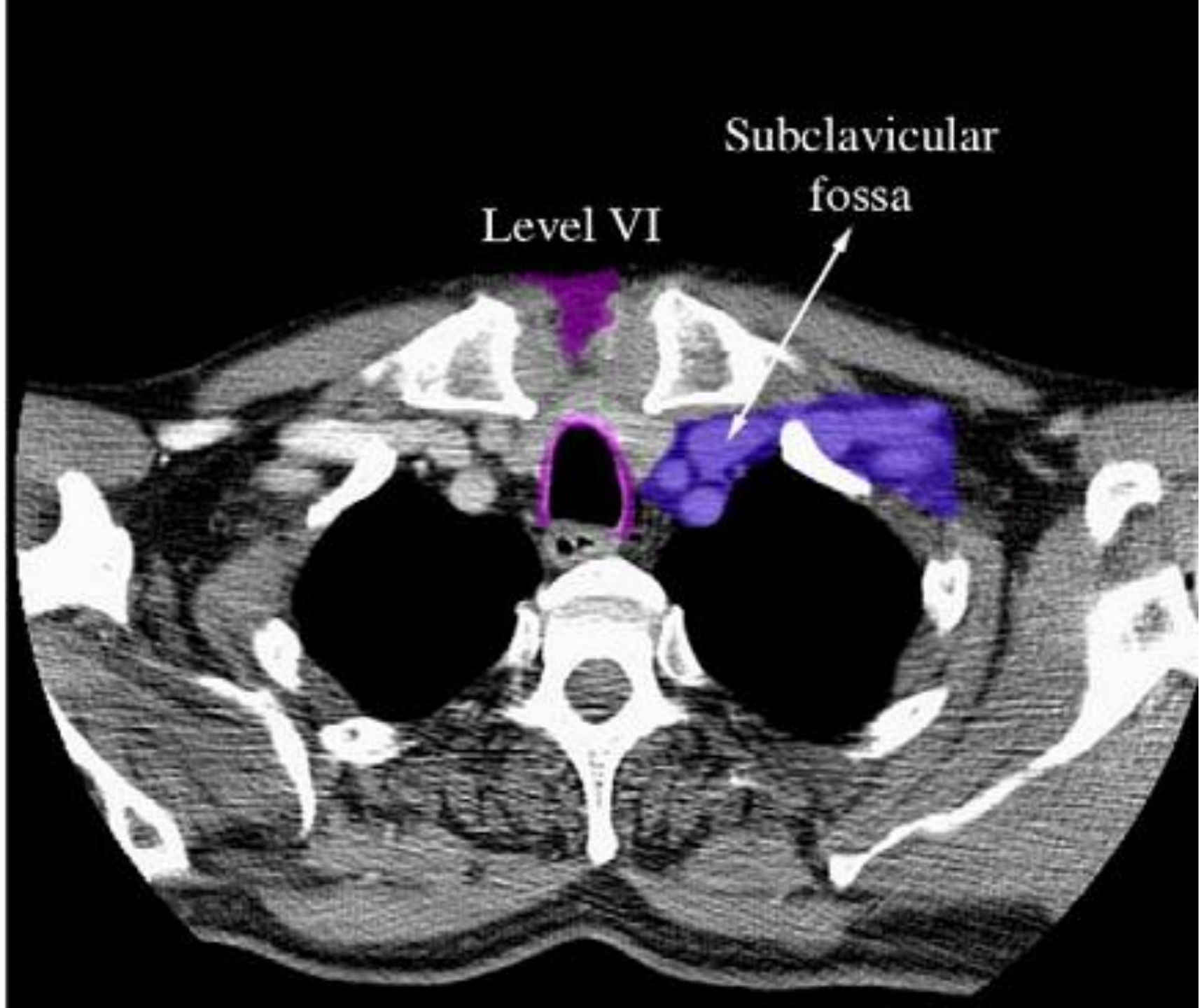
- **Go down to contour up to manubrium sterni i.e. Include level IVb & Vc as well, i.e. Supra Clavicular region**




Level VI
Level IV
Subclavicular
fossa


Level IV
Level VI
Subclavicular
fossa


Subclavicular
fossa
Level VI


Subclavicular
fossa
Level VI

Extra Capsular Extension(ECE)

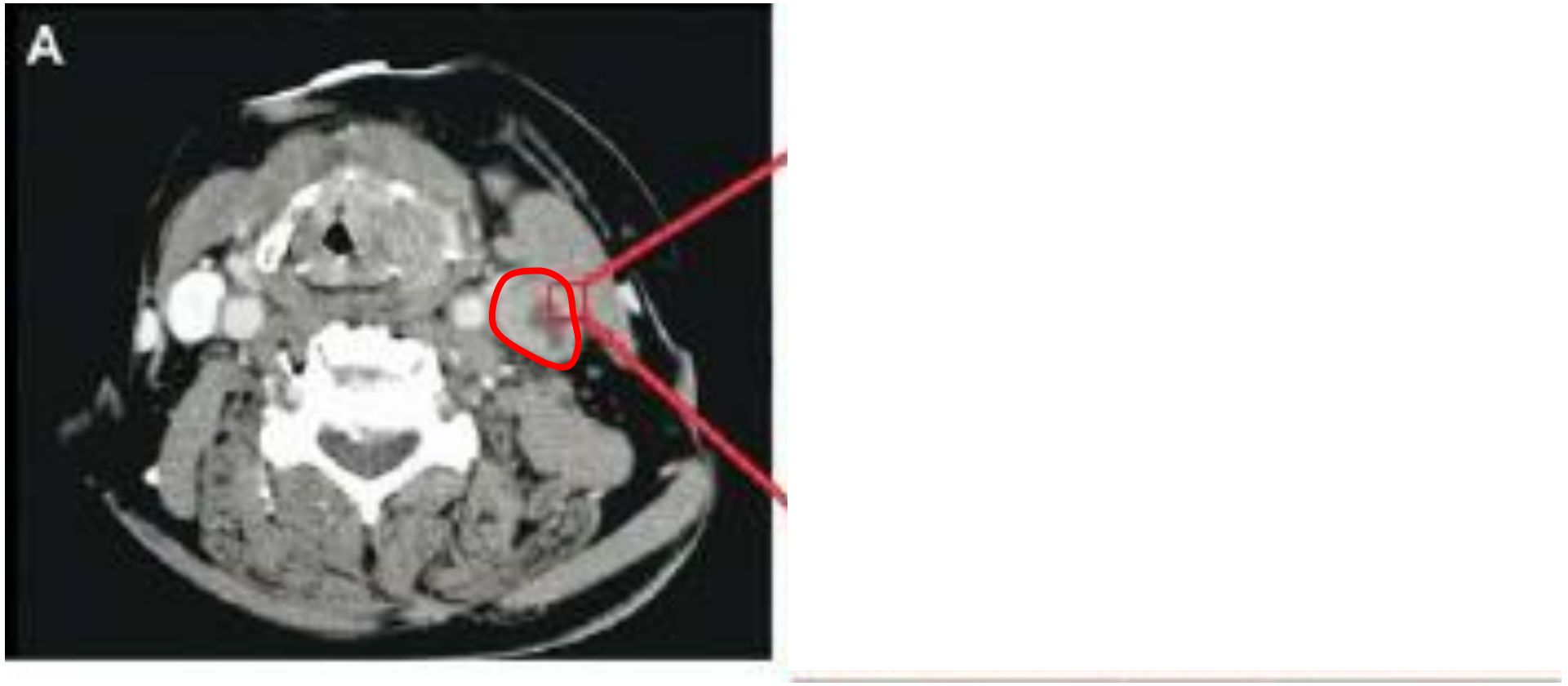
➢Clinical Criteria

- ➢Skin Infiltration
- ➢Fixed or restricted mobility
- ➢Clinical Sign of Nerve damage

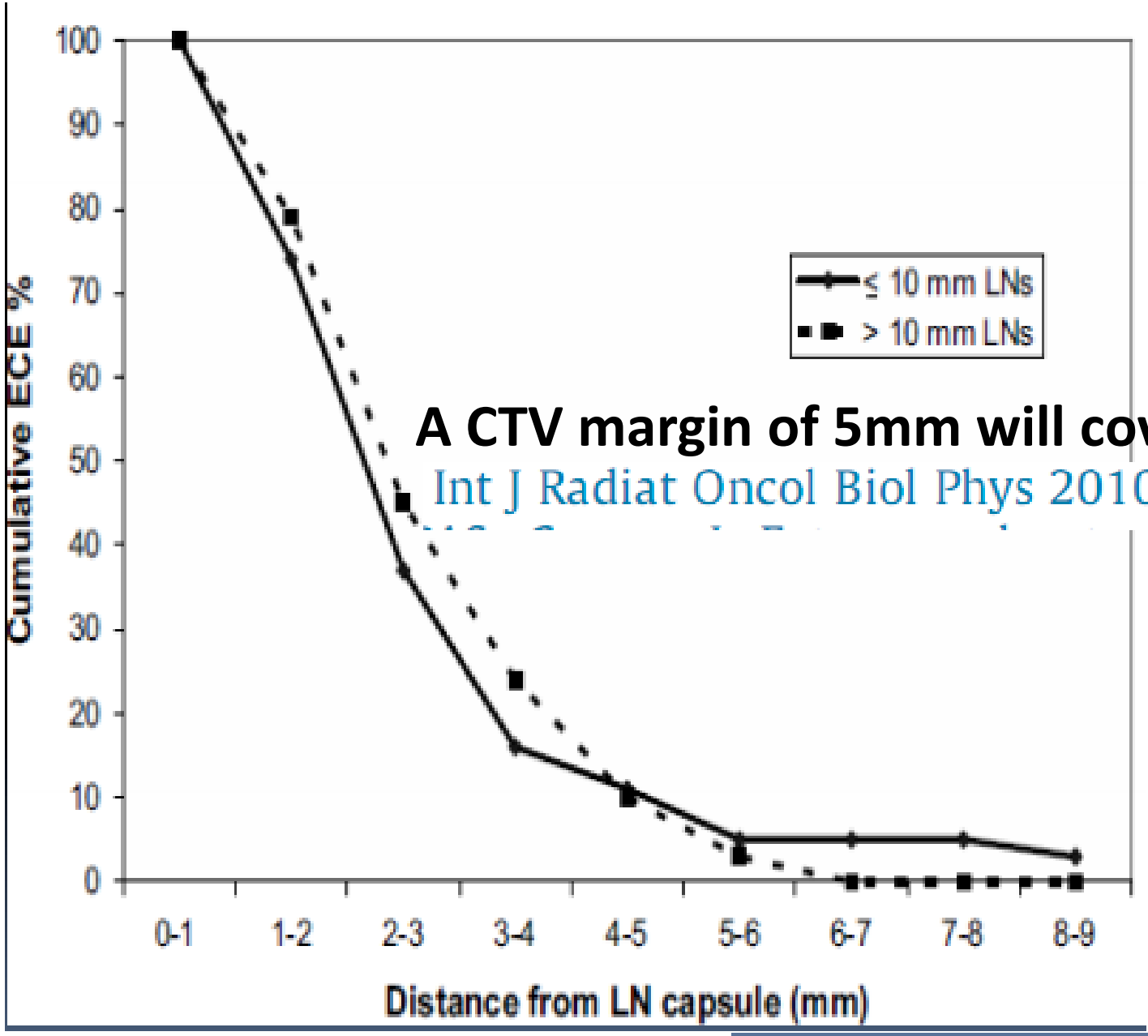
➢Imaging Criteria

- ➢Irregular Capsular Enhancement.
- ➢Ill defined nodal margins
- ➢Obliterated Fat Plane
- ➢Edema or thickening of adjacent soft tissue

Extra Capsular Extension(ECE)



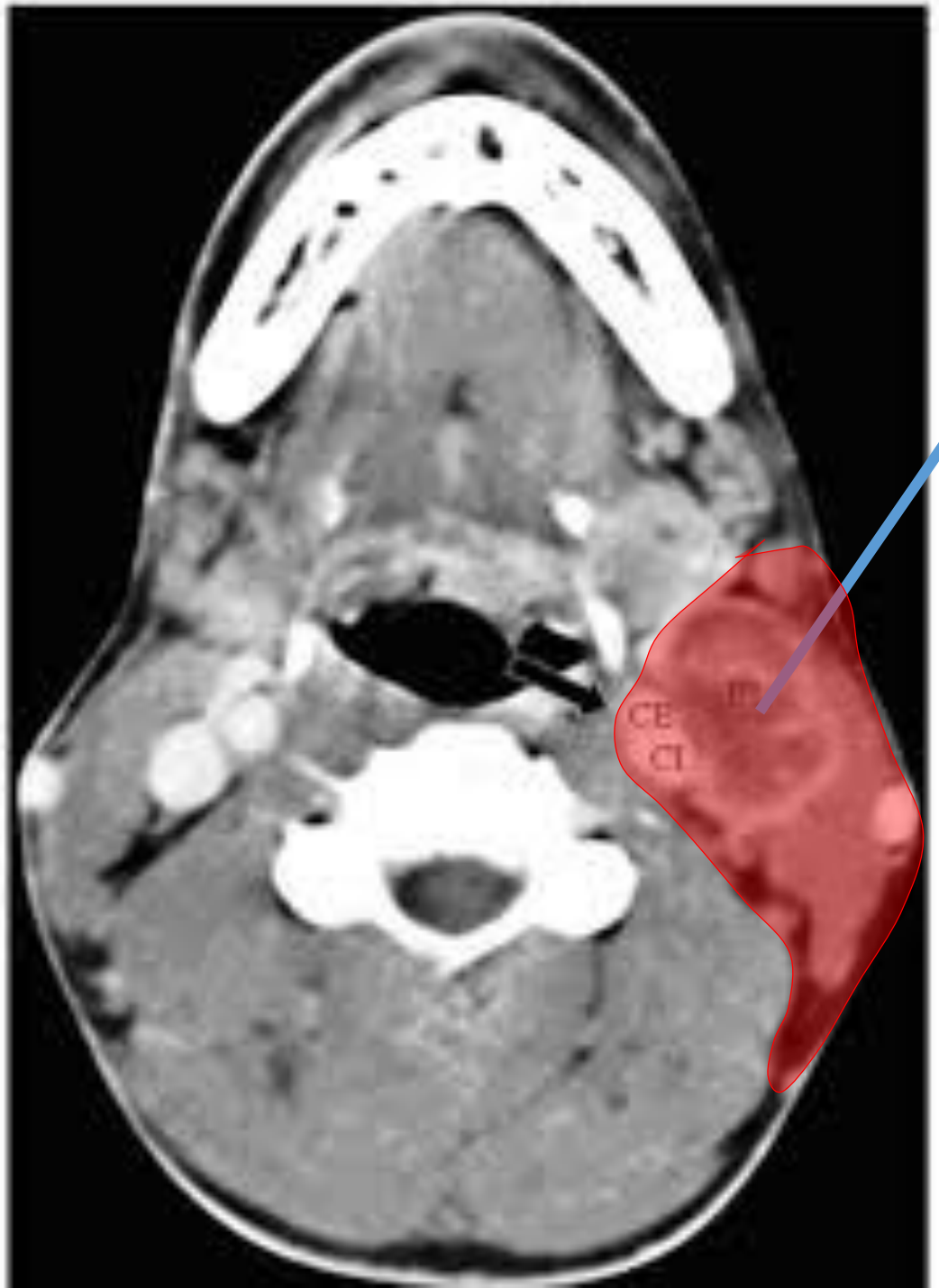
The majority of the ECE extend <5mm from the capsule of node (97% of the cases).



A CTV margin of 5mm will cover most of the ECE

Int J Radiat Oncol Biol Phys 2010;76:1127–32.

Chao IMRT in Head & Neck Cancer.pdf
Apisarnthanarax IJROBP. 64 (2006) 678–683

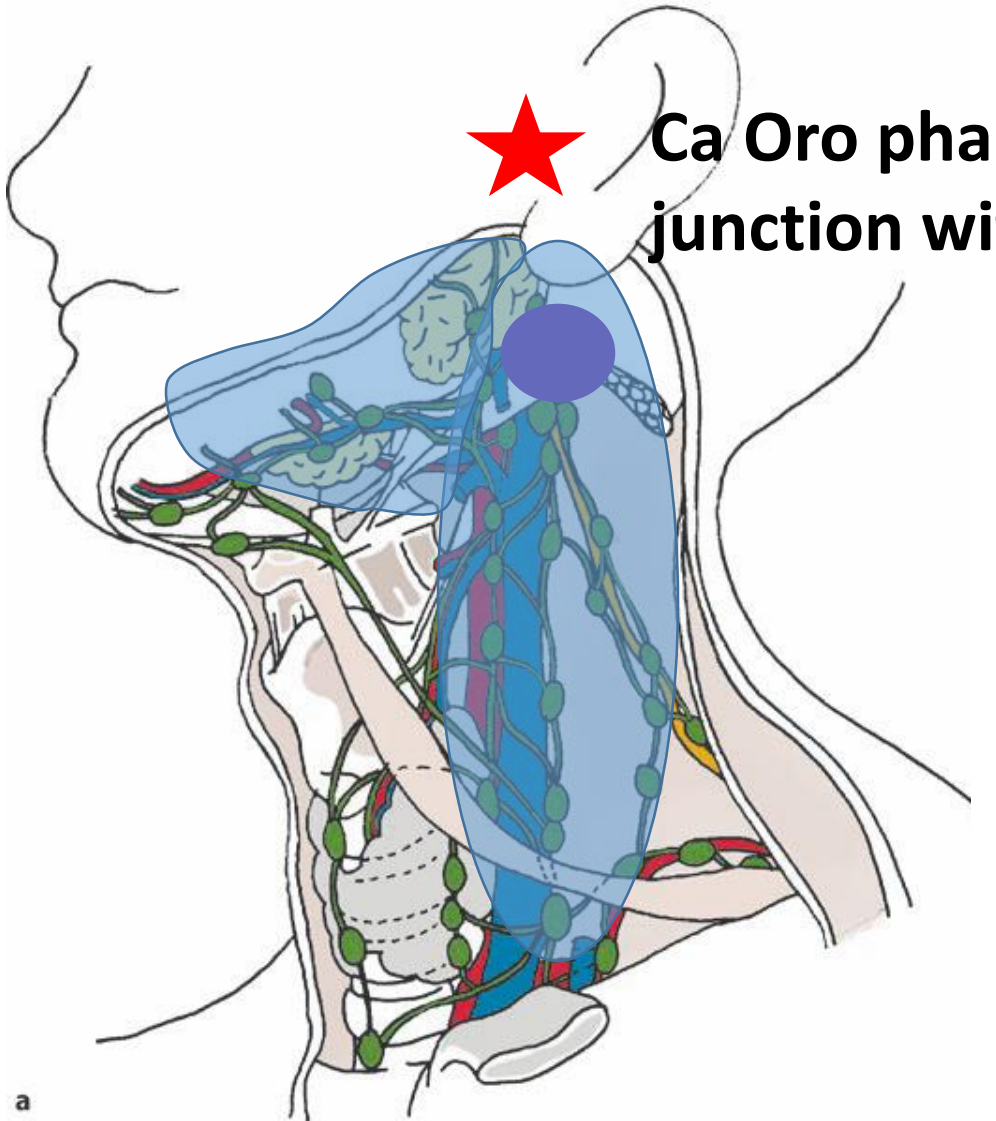


Node Infiltrating the muscle

Include whole muscle in CTV at the level of infiltration and 1 cm cranio-caudally

Junction Nodes

If N1 node is located at the boundary with another level which was not intended to be part of CTV, then extend the CTV to include that level



Ca Oro pharynx with N1 node at junction with Level Ib

Pattern of Spread

- **Prophylactic neck node irradiation is required if the incidence of occult metastasis is > 10-15%.**

Pattern of Spread

- **Typically, nasopharyngeal and hypopharyngeal tumors have the highest propensity of nodal involvement which occurs in 80 and 70%, respectively.**
- **Interestingly, the node distribution follows the same pattern in the contra-lateral neck as in the ipsi-lateral neck.**
- **Contra lateral level V is usually not involved**

Micro Metastasis in Levels I-V for clinically N0 neck

Tumor site	Levels involved(%)				
	I	II	III	IV	V
Oral cavity	20	17	9	3	0.5
Oropharynx	2	25	19	8	2
Hypopharynx	0	13	13	0	0
Larynx	5	19	20	9	2.5

- In non-nasopharyngeal cancers of head and neck, level V is not included in N0 neck as incidence of involvement is <5%.
- Similarly, in oro-pharynx, hypo-pharynx and larynx, level I is not included as again incidence of occult metastasis is <5%.

Non Nasopharyngeal N0 Neck

- **Oral Cavity Ca** → **Level I, II, III and in ca tongue level IV**
- **Oro pharynx**
- **Hypo pharynx**
- **larynx**

} **Level II, II, IV**

Incidence and distribution of regional metastasis for Levels I–V for clinically N+ve neck

Tumor site	Levels involved (%)				
	I	II	III	IV	V
Oral cavity	48	39	31	15	4
Oropharynx	15	71	42	27	9
Hypopharynx	10	75	72	45	11
Larynx	5	61	54	30	6

- In non-nasopharyngeal cancers of head and neck, level V is included in N+ve neck except in ca oral cavity where incidence is <5%.
- Similarly level I should be included in neck positive disease except in +/- larynx.

N +ve neck

One adjacent extra nodal level is also at high risk of occult metastasis and should be treated.

Oral Cavity	**Level I,II & III**	**+ Level IV**
Pharynx	**Level II,III & IV**	**+ Level I & V**
Larynx	**Level II,II & IV**	**+ Level I & V**

When to Treat RP Nodes?

Incidence of retropharyngeal lymph nodes in head and neck squamous cell carcinomas

	N0 neck	N+ neck
Oropharynx		
pharyngeal wall (n=93)	16%	21%
soft palate (n=53)	5%	19%
tonsillar fossa (n=176)	4%	12%
base of tongue (n=121)	0%	6%
Hypopharynx (n=136)	0%	9%
Supraglottic larynx (n=196)	0%	4%
Nasopharynx (n=474)	17%	47%

From McLaughlin, Chua, Chong

N0 Neck → Nasopharynx and Pharyngeal Wall

N+ Neck → All sites except larynx

RP nodes

- **Always treated bilaterally.**
- **Most of the patients with non nasopharyngeal tumors have risk of metastasis only in lateral RP nodes.**
- **So only lateral should be included. This can save superior constrictor muscle, thus better swallowing after RT**

Oral Cavity Tips

- **Bilateral Neck to be treated except T1 and T2,N0, Buccal mucosa and RM trigone where same side of neck to be treated.**
- **Level I-III nodes are to be treated in N0 except in oral tongue ca where I-IV are treated.**
- **Level IIb may be omitted in N0.**
- **With multiple nodes include level V also(Level I-V).**

Pharynx Tips

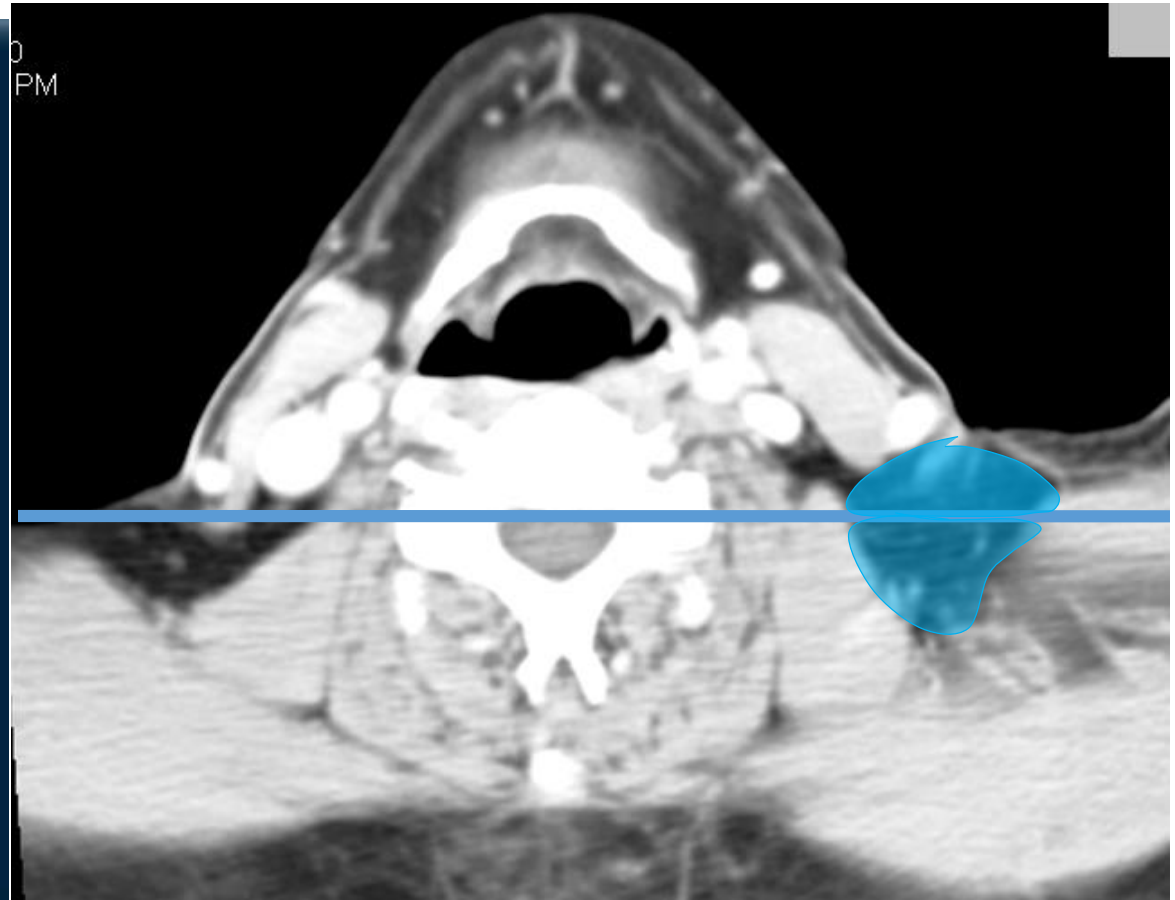
- **Oro and hypo Pharynx**
- ***Treat bilateral neck except N0, T1 and T2 tonsil.***
- **N0 → Level II-IV,**
  - ***IIb may be omitted***
  - ***Post Pharyngeal wall include RP nodes as well***
- **With single node <6cm, also include level V and RP nodes (Level II-V with RP)**
- **With multiple nodes or >6cm size also include level I also(I-V with RP)**
- **With Pyifrom sinus apex and esophageal extension also include level VI.**

Larynx Tips

- **Treat bilaterally**
- **With N0, level II-IV.**
  - ***IIb may be omitted***
- **With single node <6cm size, also include level V (II-V)**
- **With multiple nodes or >6cm size also include level I also (I-V).**
- **With trans glottic and sub glottic ext also include level VI**

Nasopharynx Tips

- Delineate Levels II – V and retropharyngeal nodes in No patients.
- Include Level I B in N+ patients.
- Delineate Level II till the base of skull in all patients.
- Delineate the entire Ho's triangle when marking Level V



Thanks

Greetings From Rishikesh