

Clinical Anatomy of the Thyroid and Adrenal Glands

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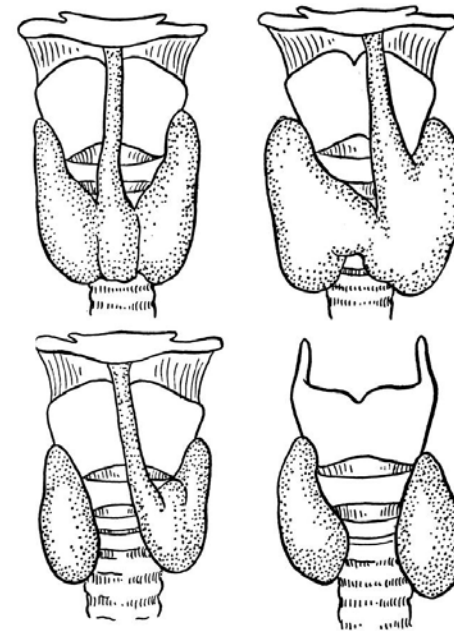
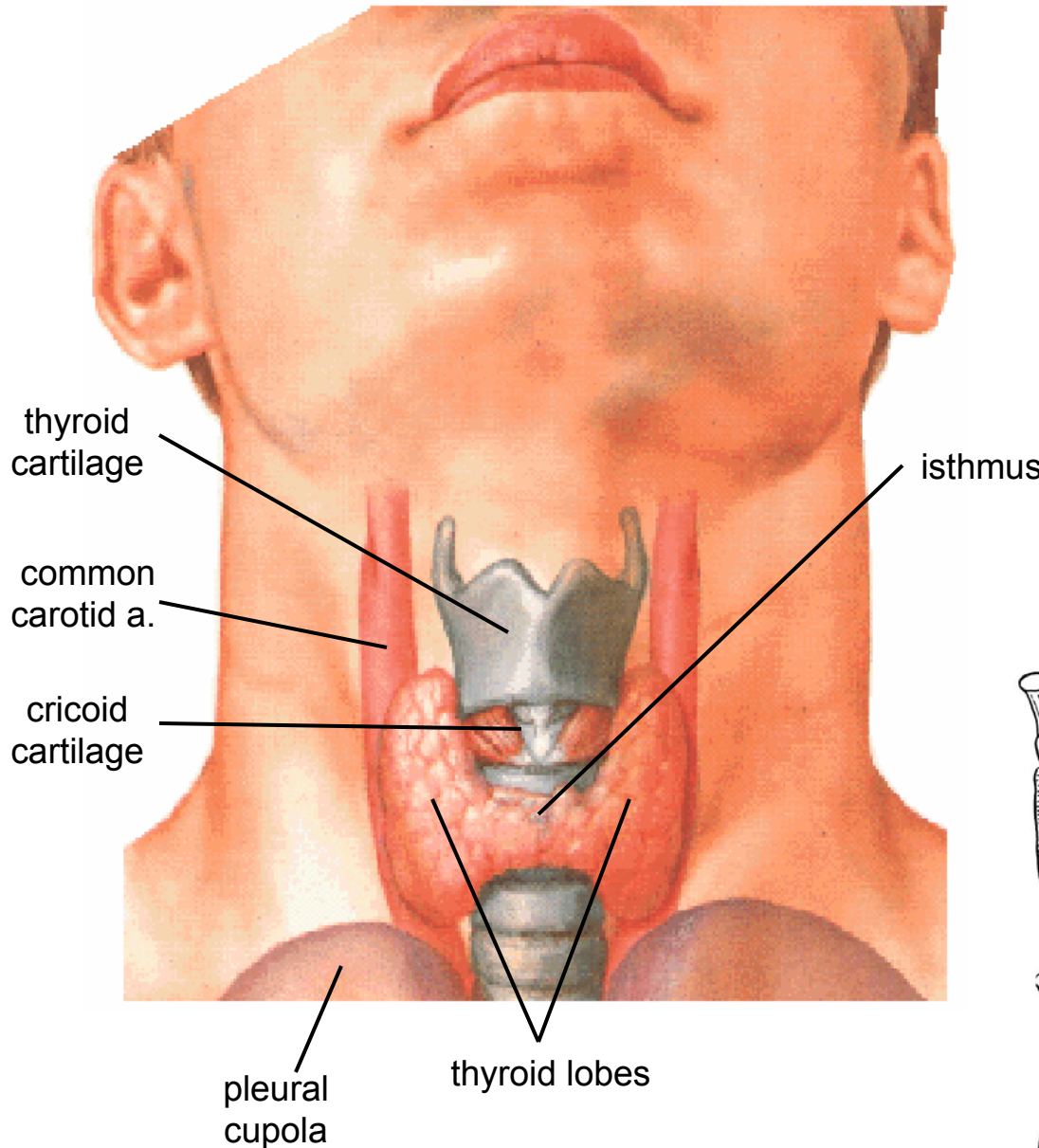
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Anatomical Overview

- Right & left lobes connected by an isthmus
- Occasional pyramidal lobe
- Levator glandulae thyroideae
- Slightly larger in women; may enlarge during menstruation & pregnancy
- Extends from oblique line on thyroid cartilage down to 4th or 5th tracheal ring
- Attaches to cricoid cartilage via suspensory ligament



Case Presentation

A 32-year-old woman presents with a swelling on the anterior part of her neck. She also reports that her breathing is sometimes affected by the swelling. On examination, a single, firm, rounded mass can be felt on the left side of the laryngotracheal region. It moves up and down with swallowing. Ultrasound reveals a solid nodule in the left lobe of her thyroid gland. A needle biopsy subsequently indicates that malignant changes have taken place in the cells.

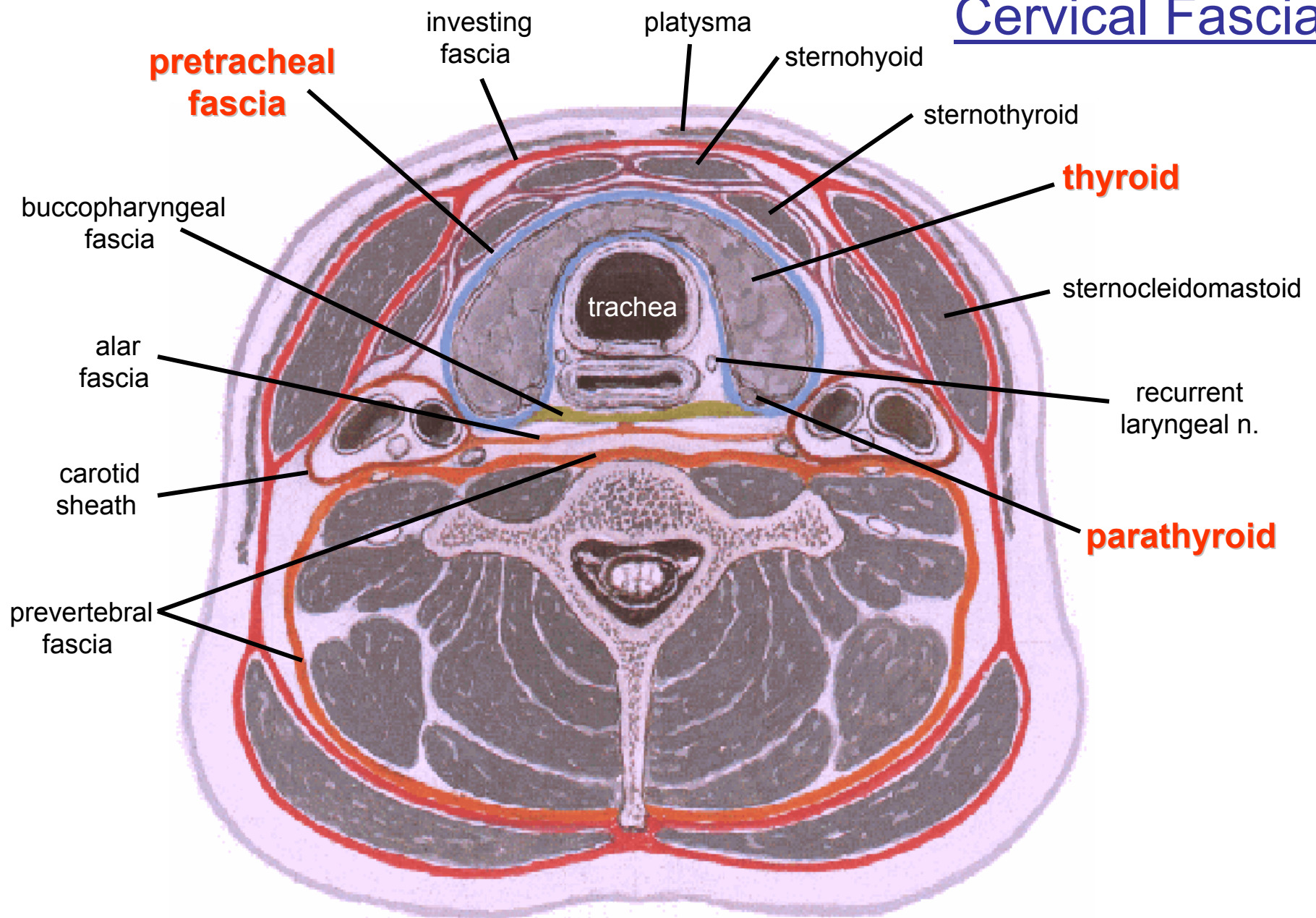
Preliminary Diagnosis:

Tumor of the left lobe of the thyroid

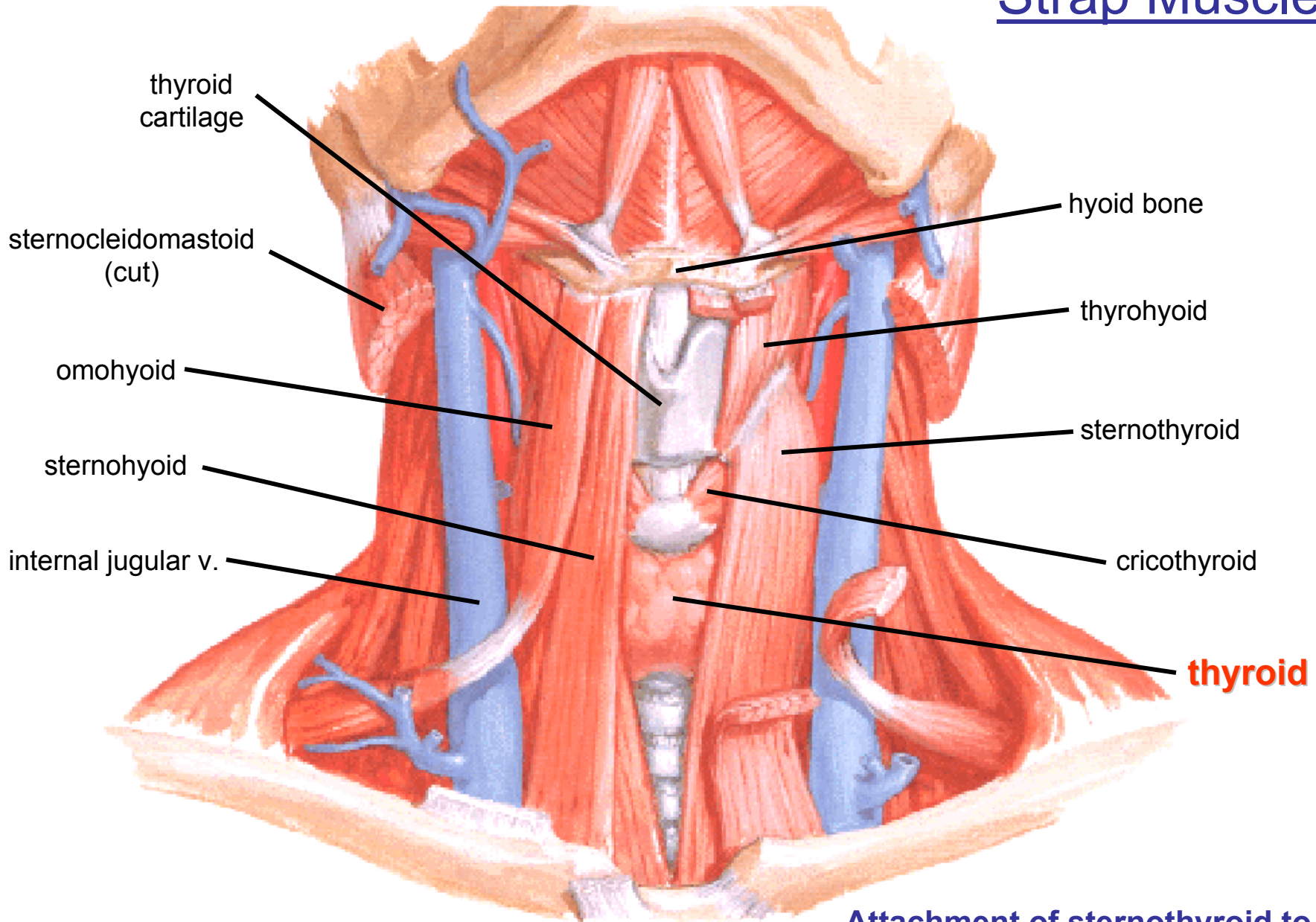
Questions

1. Why does the mass move up and down on swallowing?
2. What can explain the difficulty breathing?
3. What structures would be endangered by subtotal or total thyroidectomy?
4. Why is the nature of the patient's voice of interest postoperatively?

Cervical Fascia

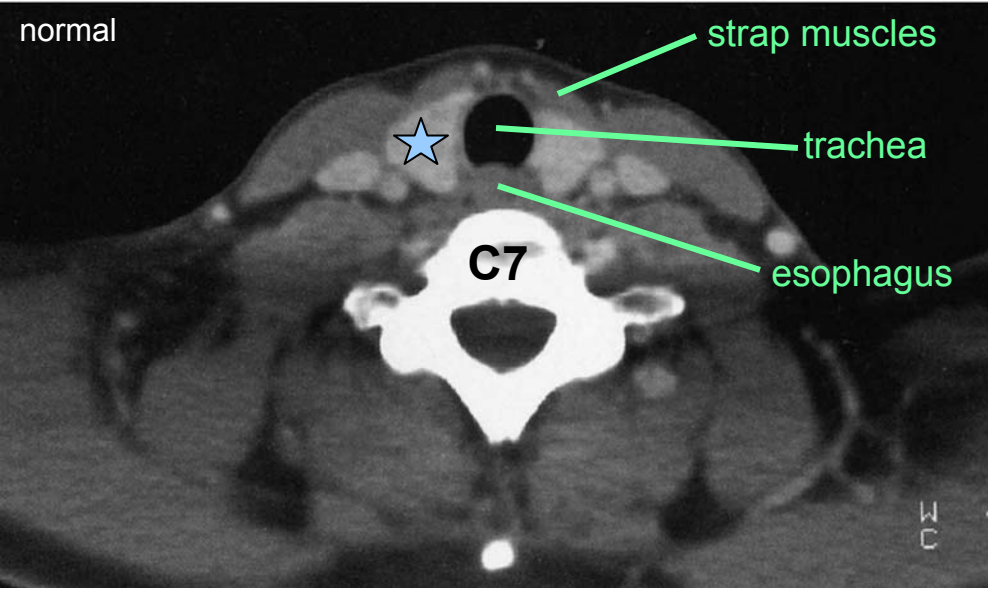


Strap Muscles

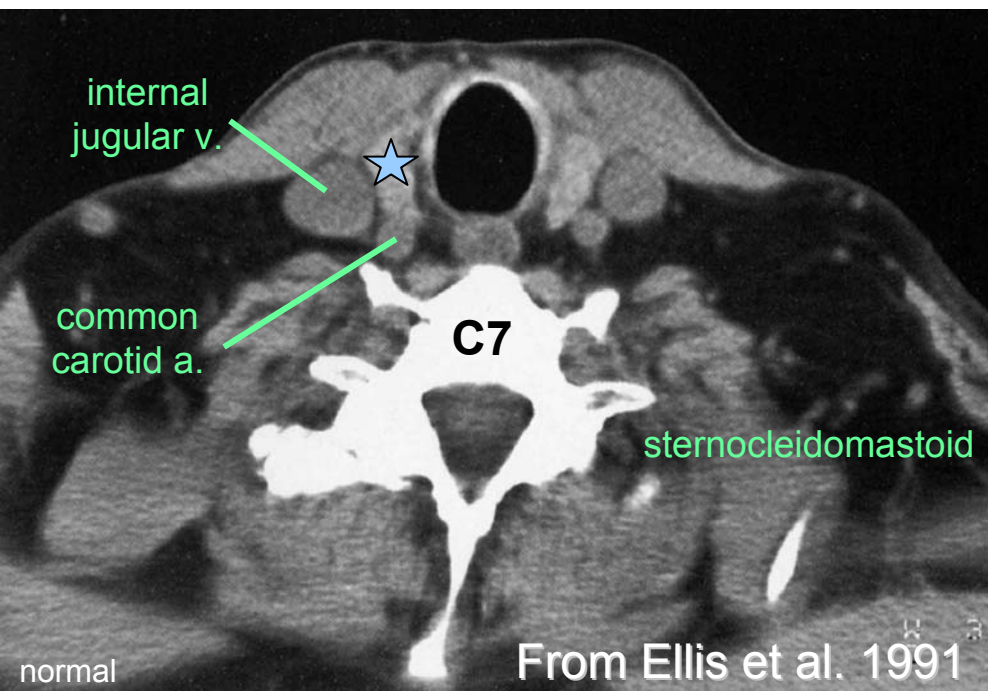


Attachment of sternothyroid to oblique line on thyroid cartilage prevents superior expansion of thyroid

normal

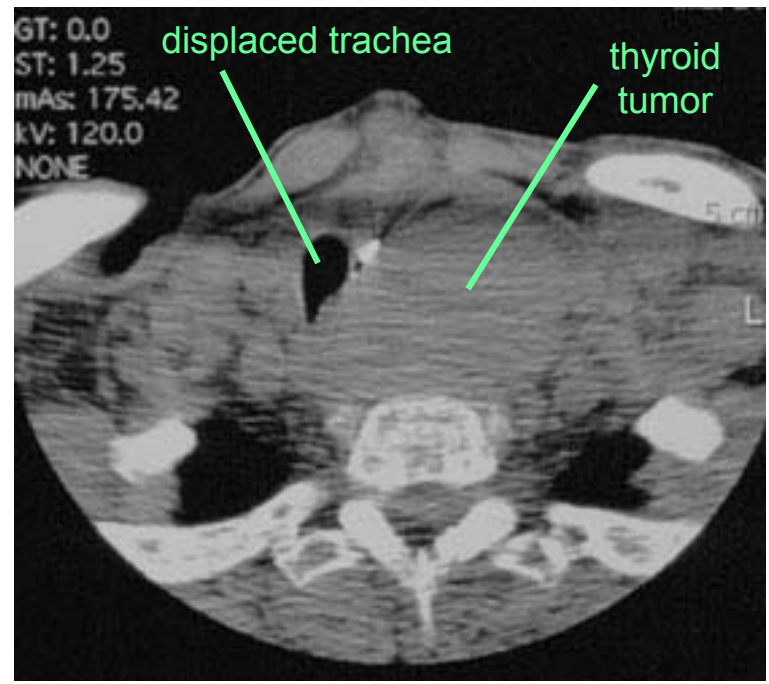


Thyroid (★)



Thyroid CT

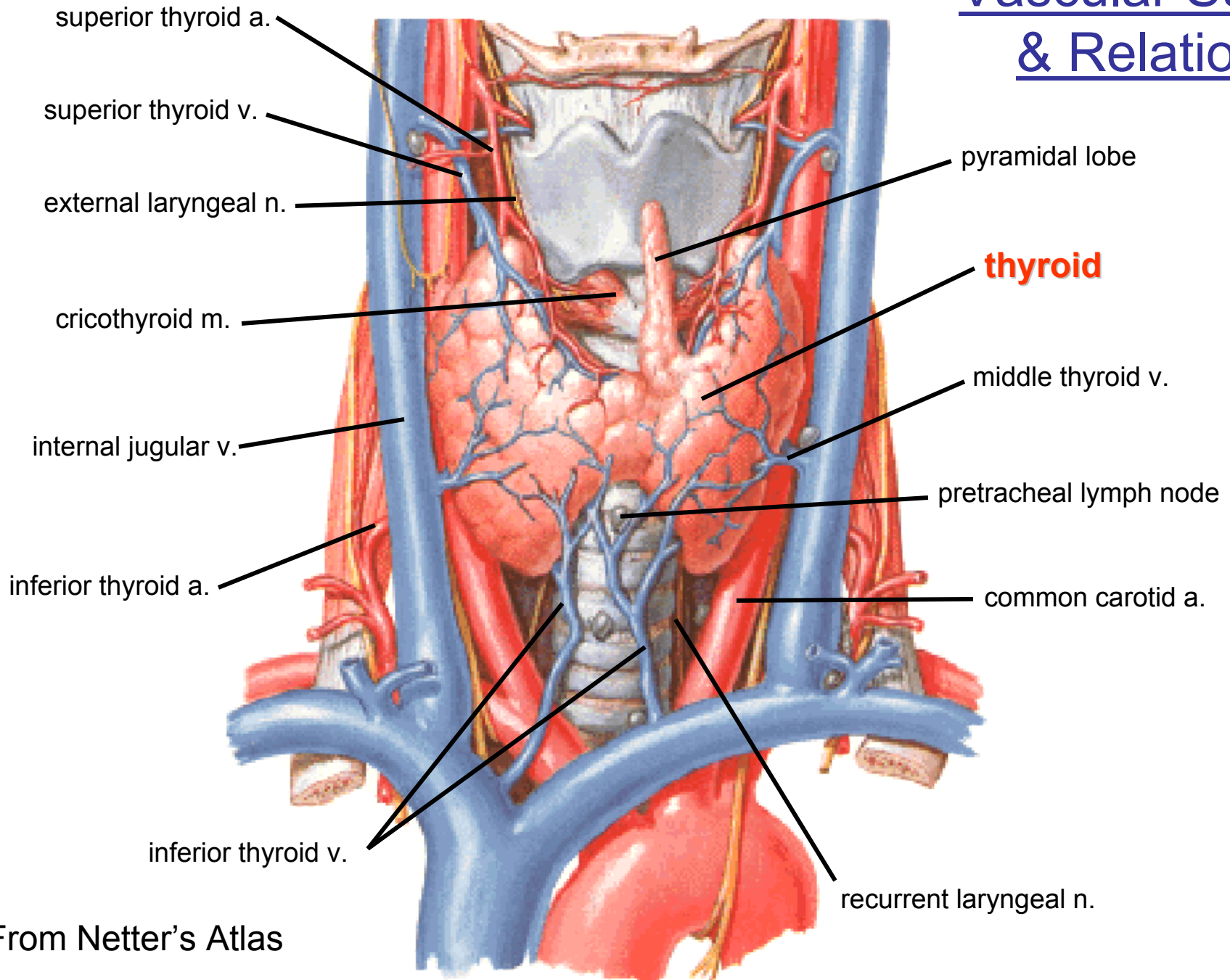
Compression and displacement of trachea by thyroid tumor



From web reference 1

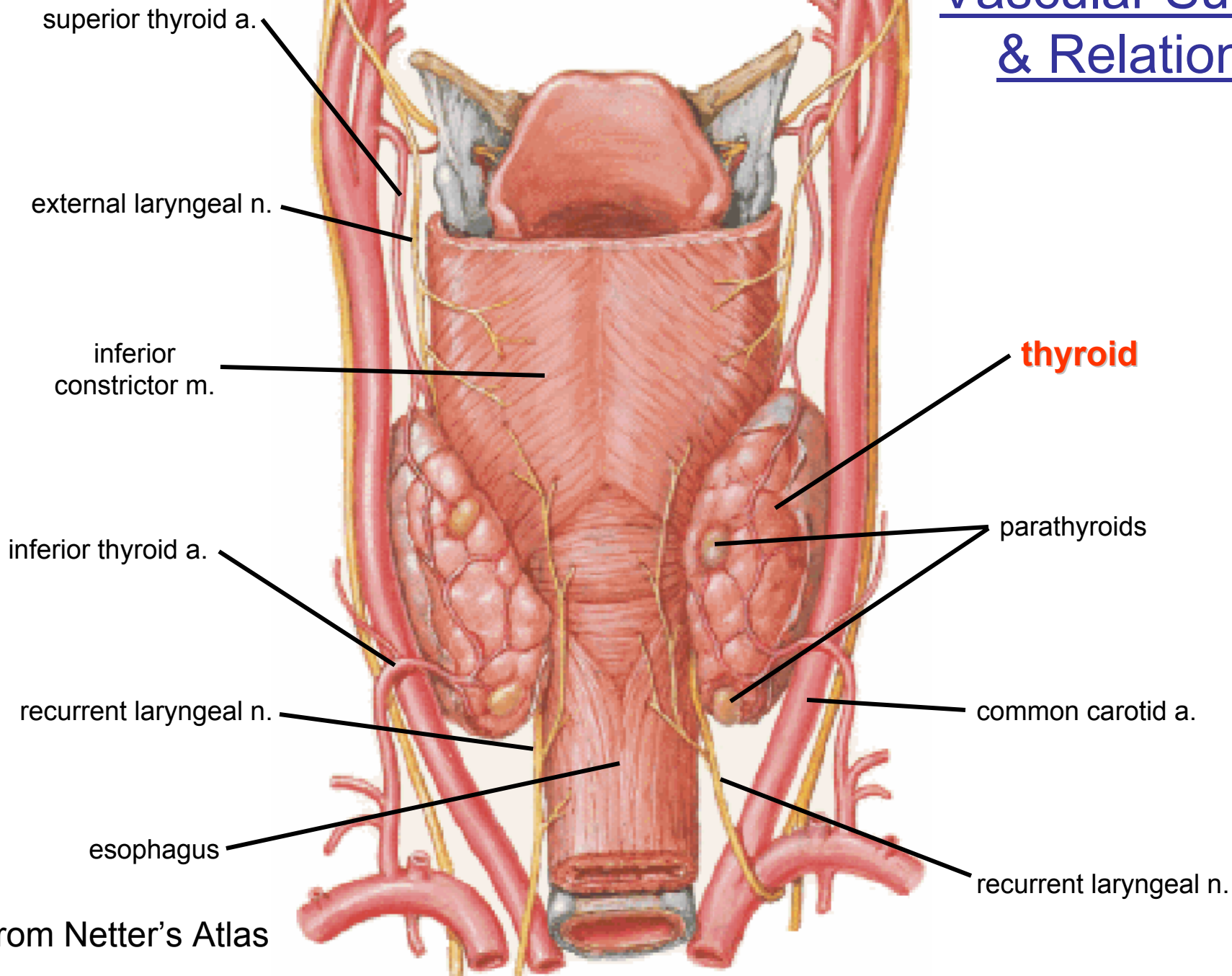
Anterior View

Vascular Supply & Relations

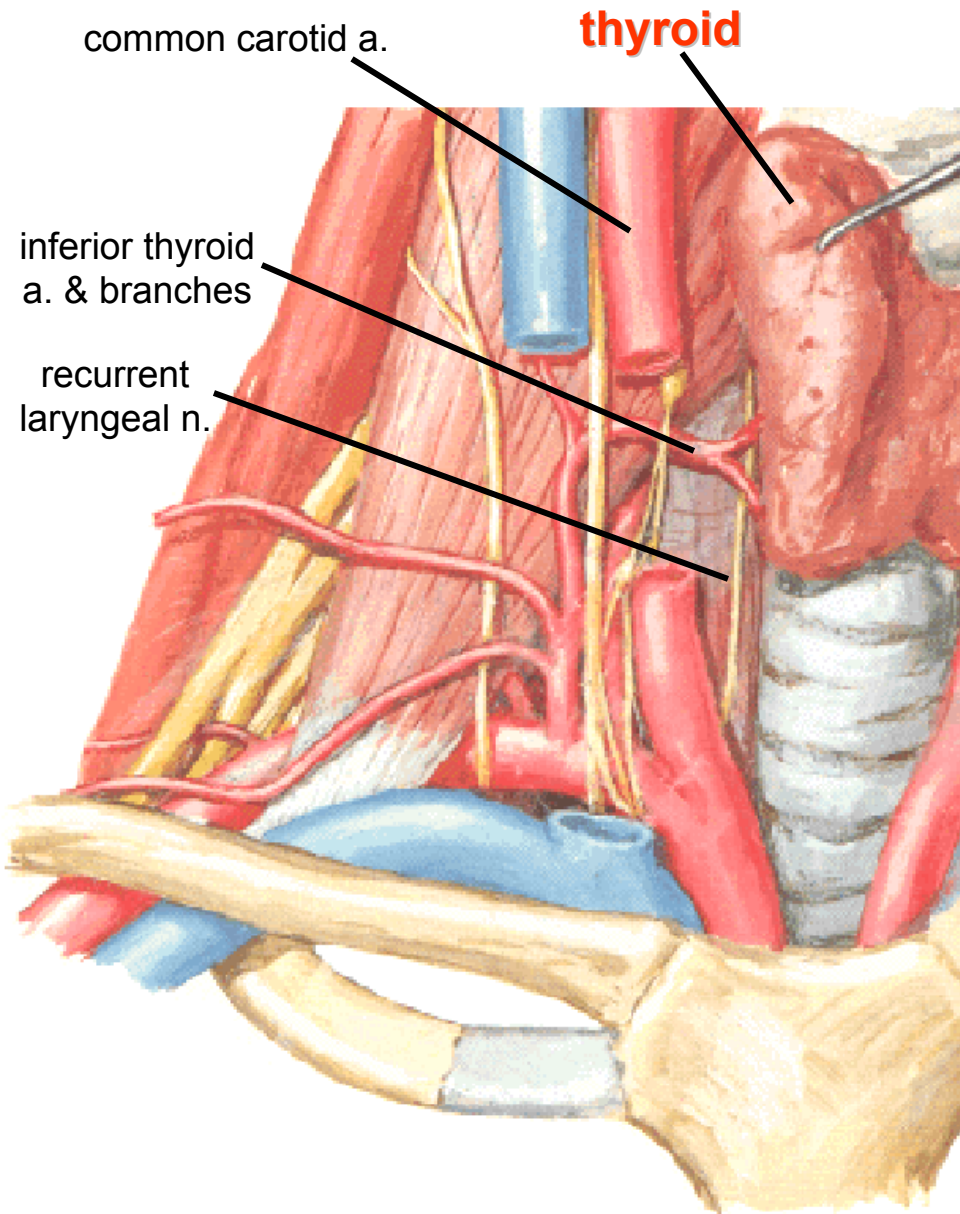


Posterior View

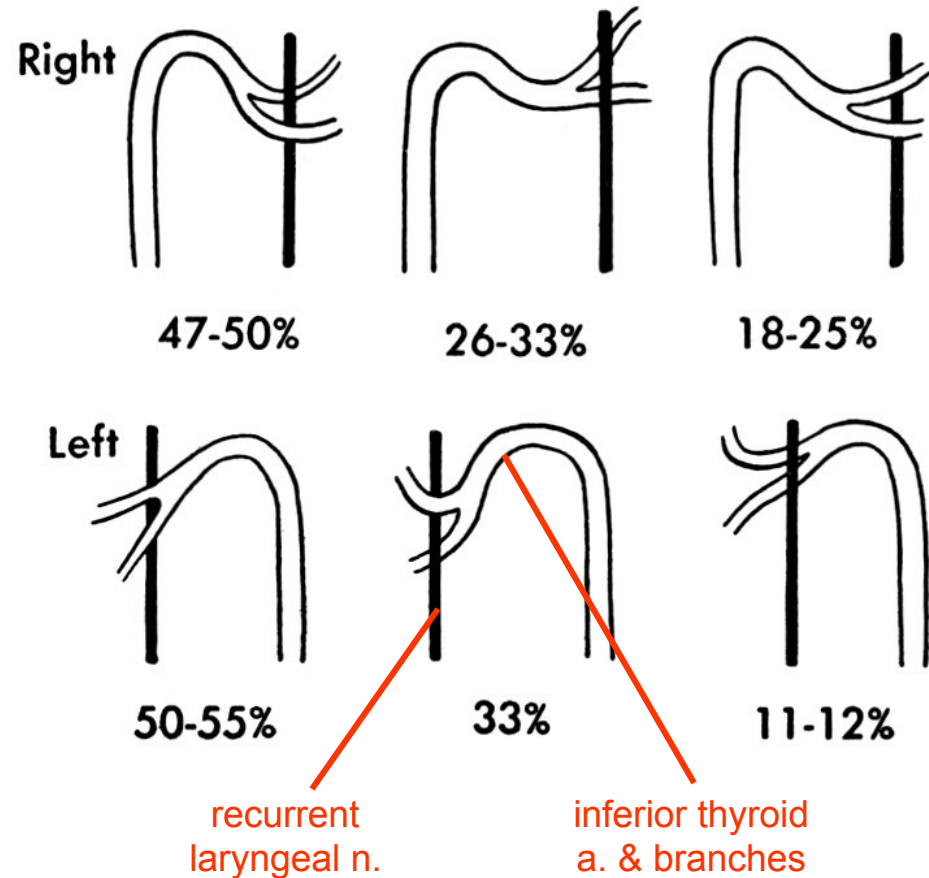
Vascular Supply
& Relations



Recurrent Laryngeal N. & Suspensory Lig. of Berry



Variation in relationship of recurrent laryngeal n. to inferior thyroid a.



(from Hollinshead 1968)

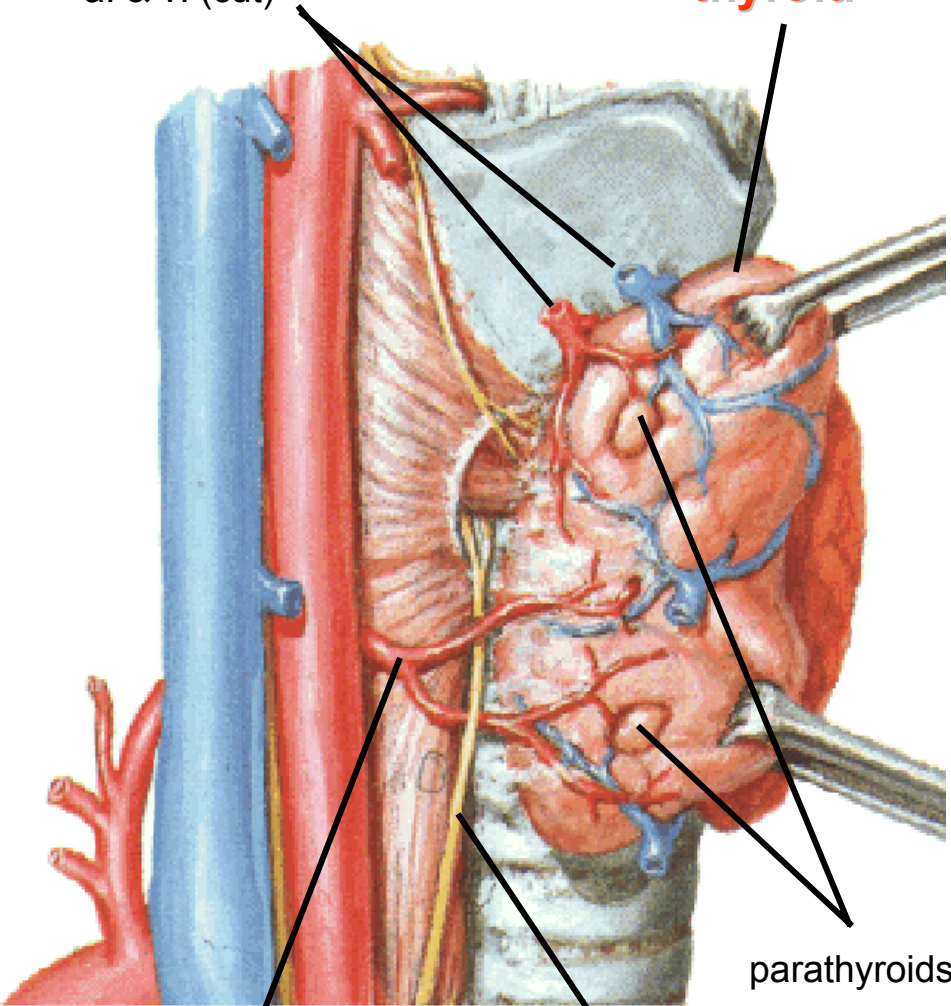
From Netter's Atlas

Recurrent Laryngeal N. & Suspensory Lig. of Berry

Variation in relationship of recurrent laryngeal n. to suspensory lig.

superior thyroid
a. & v. (cut)

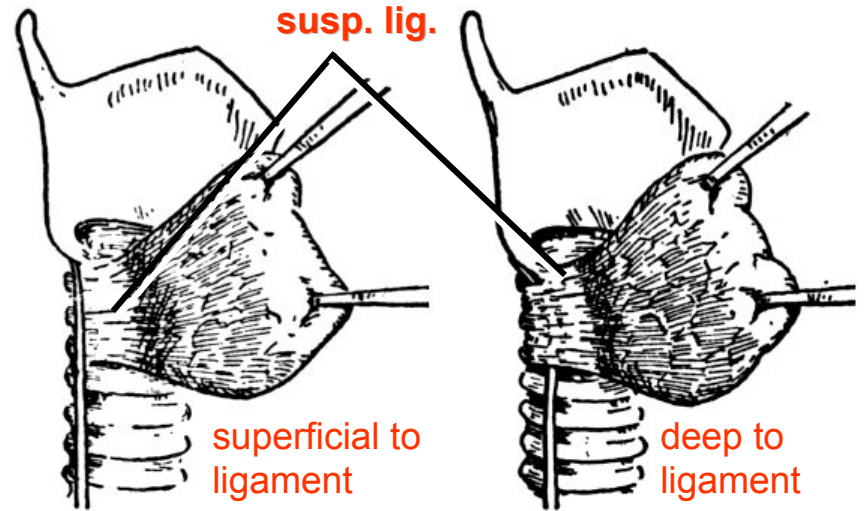
thyroid



inferior thyroid
a. & branches

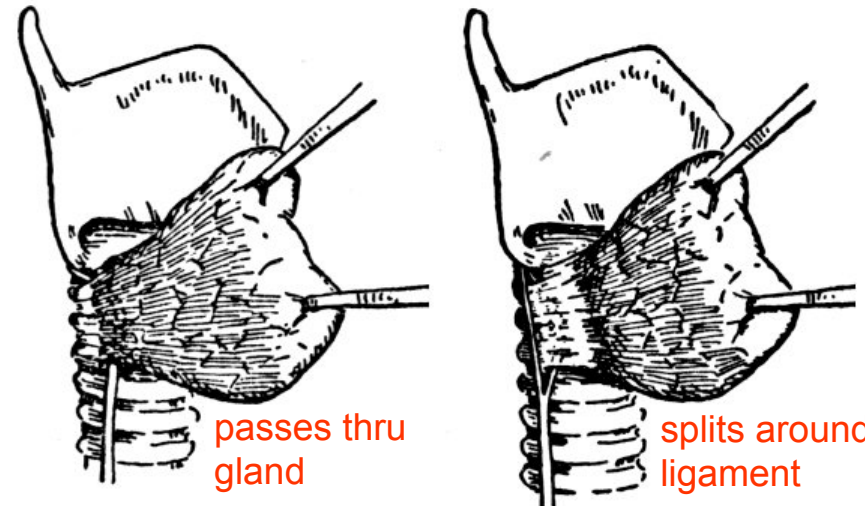
recurrent
laryngeal n.

parathyroids



superficial to
ligament

deep to
ligament



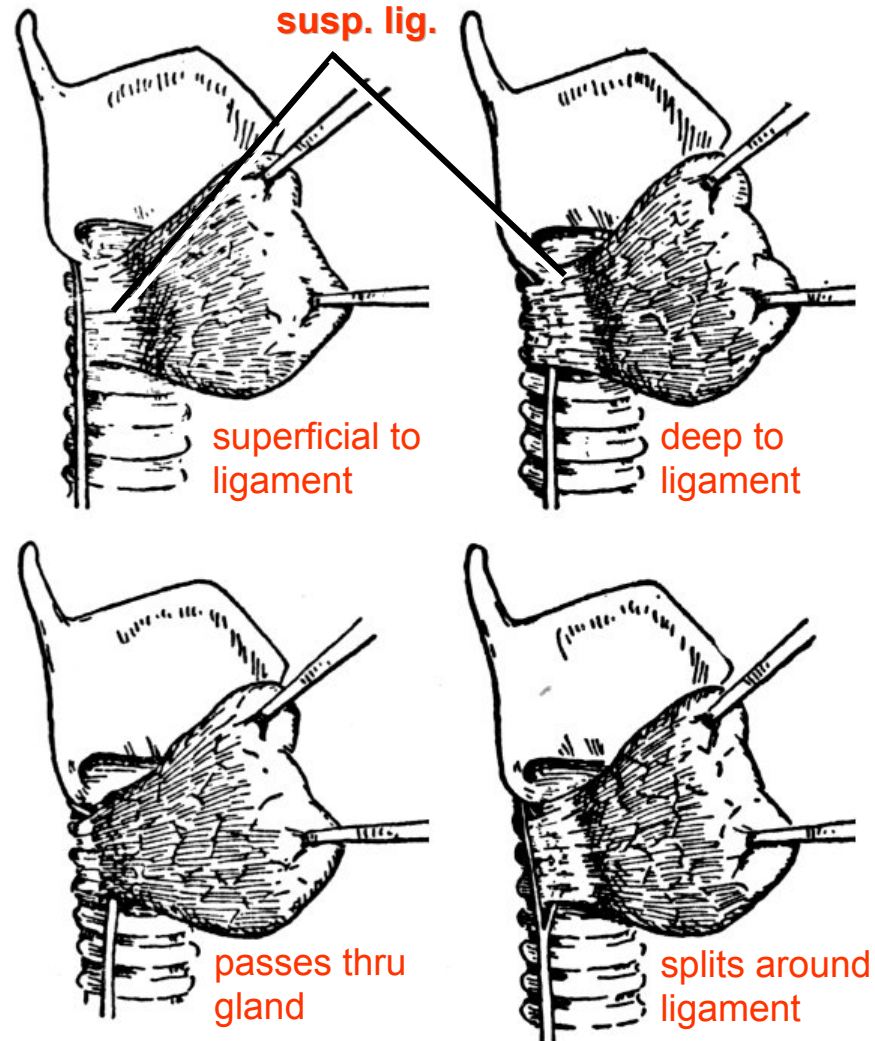
passes thru
gland

splits around
ligament

(from Hollinshead 1968)

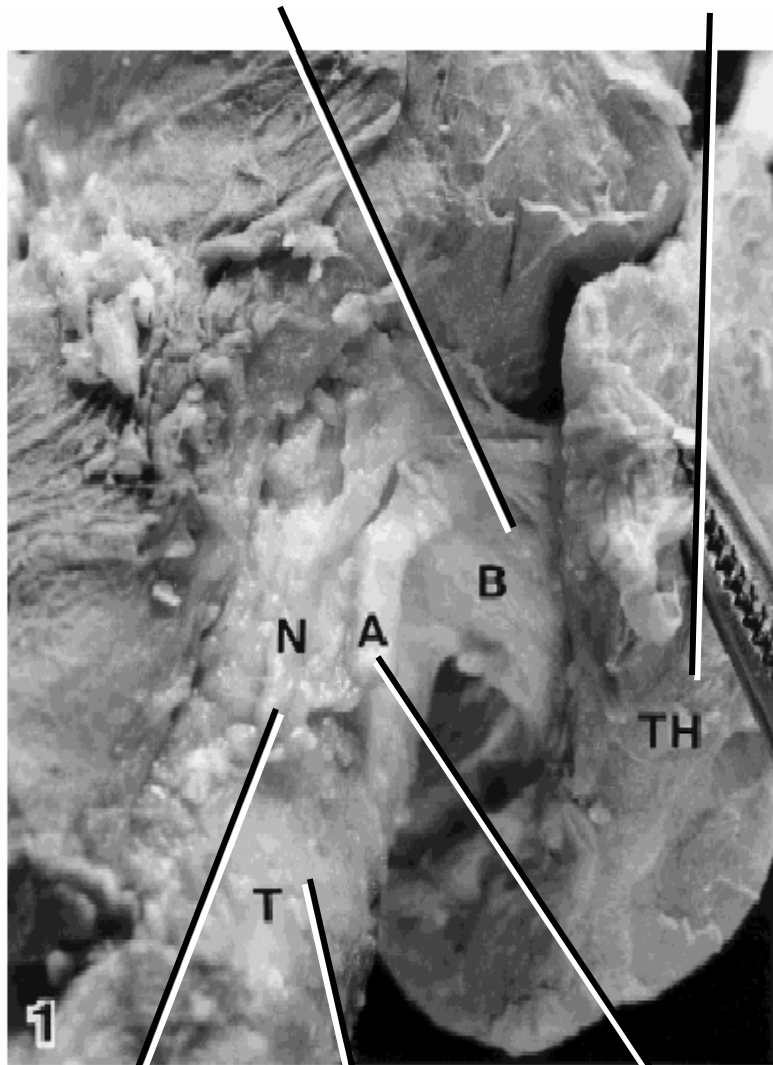
Recurrent Laryngeal N. & Suspensory Lig. of Berry

Variation in relationship of recurrent laryngeal n. to suspensory lig.



(from Hollinshead 1968)

suspensory ligament of Berry **thyroid**



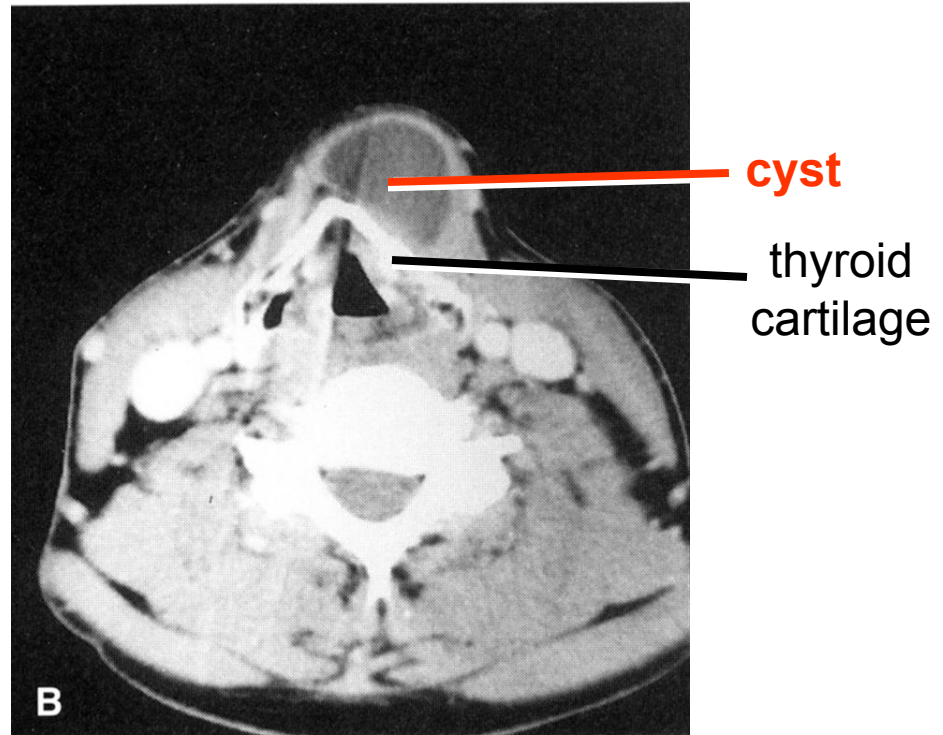
recurrent laryngeal n. trachea inferior thyroid a.

From Sasou et al. 1998

Case Presentation

A 43-year-old male presents with a swelling in the front of his neck. He first noticed it 9 months ago and it has steadily grown. The lump lays near the midline and moves on swallowing. On palpation, it is firm and lays anterior to the thyroid cartilage. The mass is smooth, non-pulsatile, and non-fluctuant. The dorsum of the tongue was inspected but no thyroid tissue was observed. Ultrasound showed the mass to be cystic and separate from the thyroid gland.

Preliminary Diagnosis:
Thyroglossal Cyst

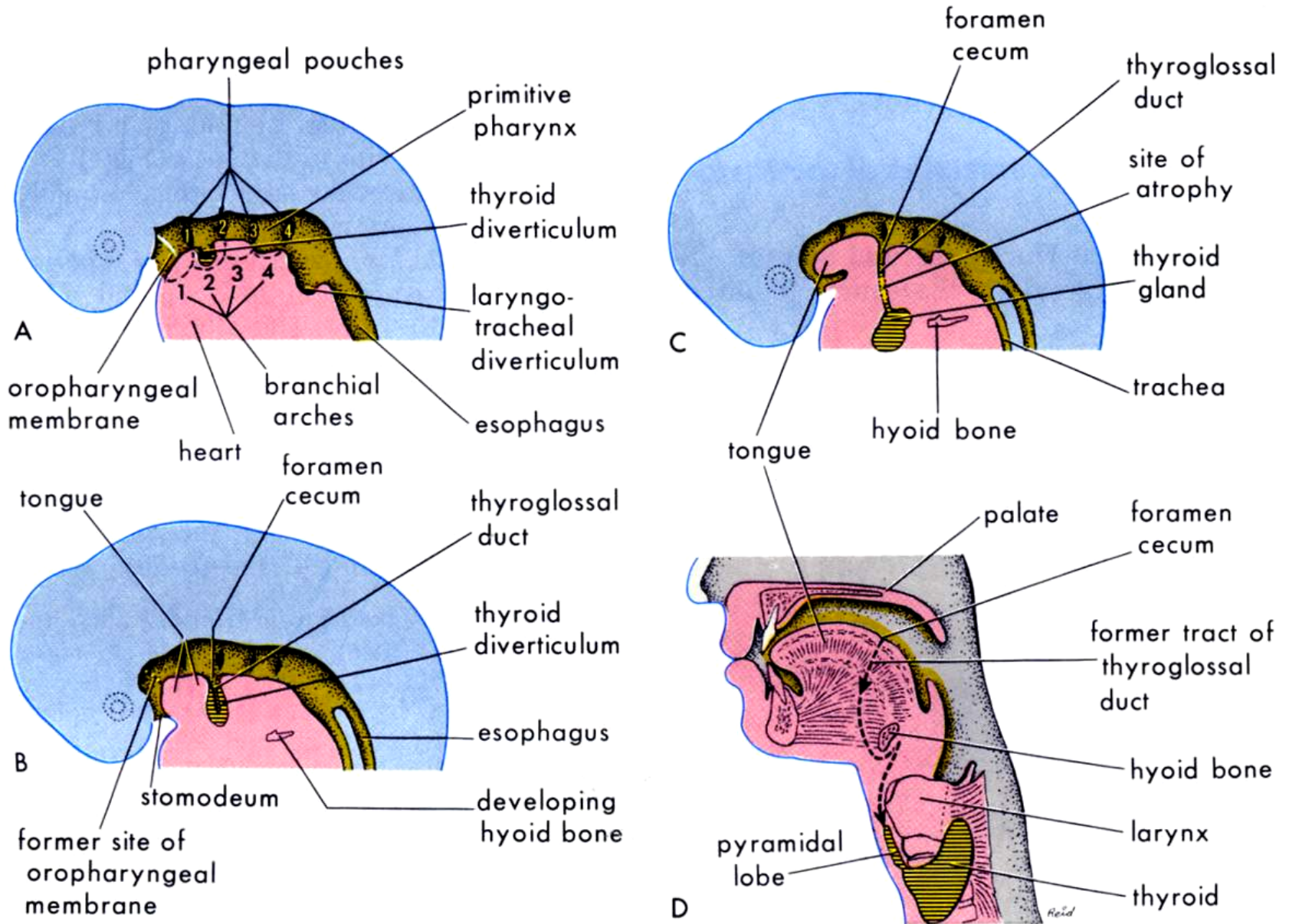


From Moore & Persaud 2003

Questions

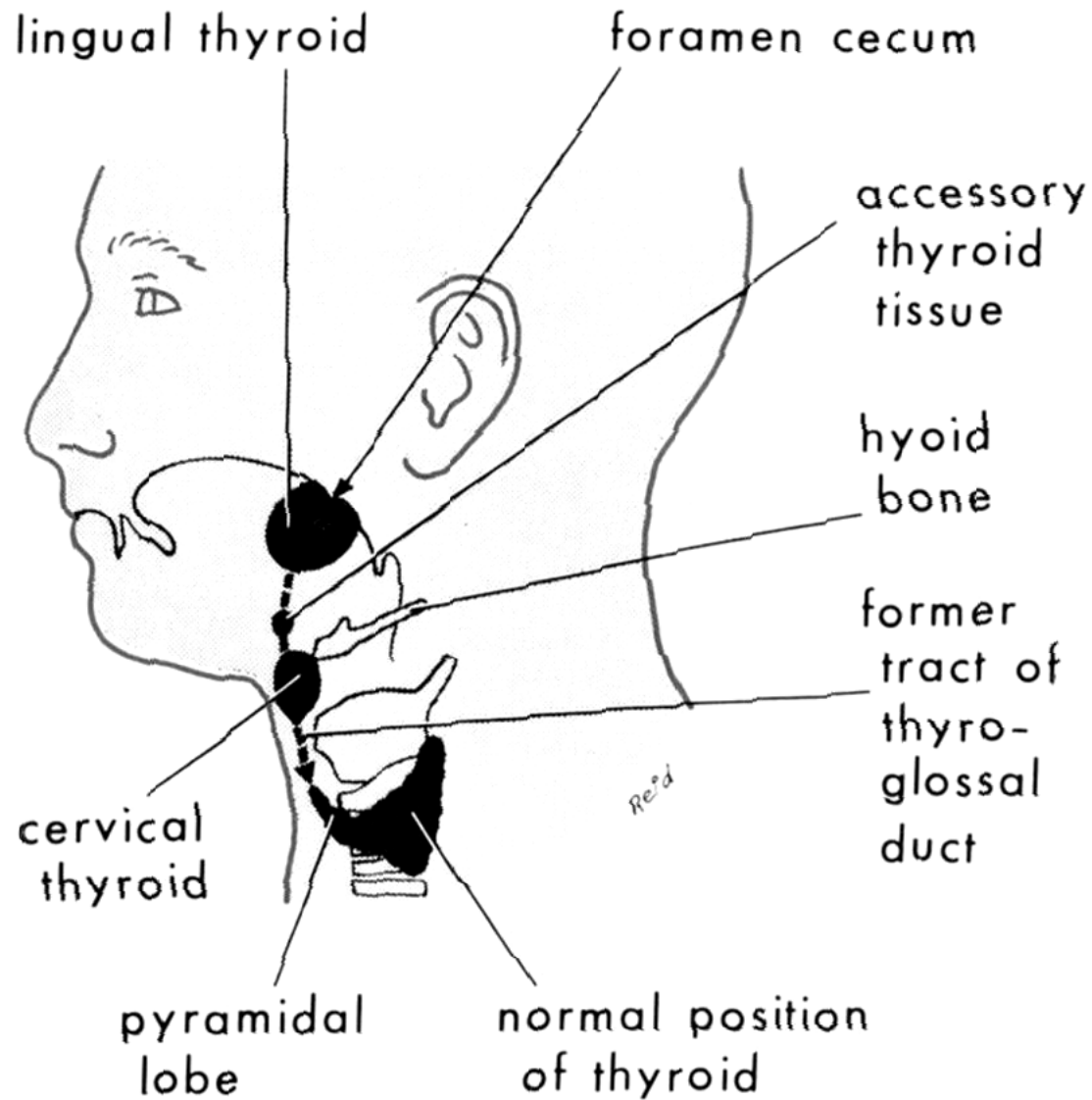
1. What is the embryonic derivation of a thyroglossal cyst?
2. Why did the mass move upwards on swallowing?
3. Why did the surgeon look for thyroid tissue on the tongue?

Thyroid Development

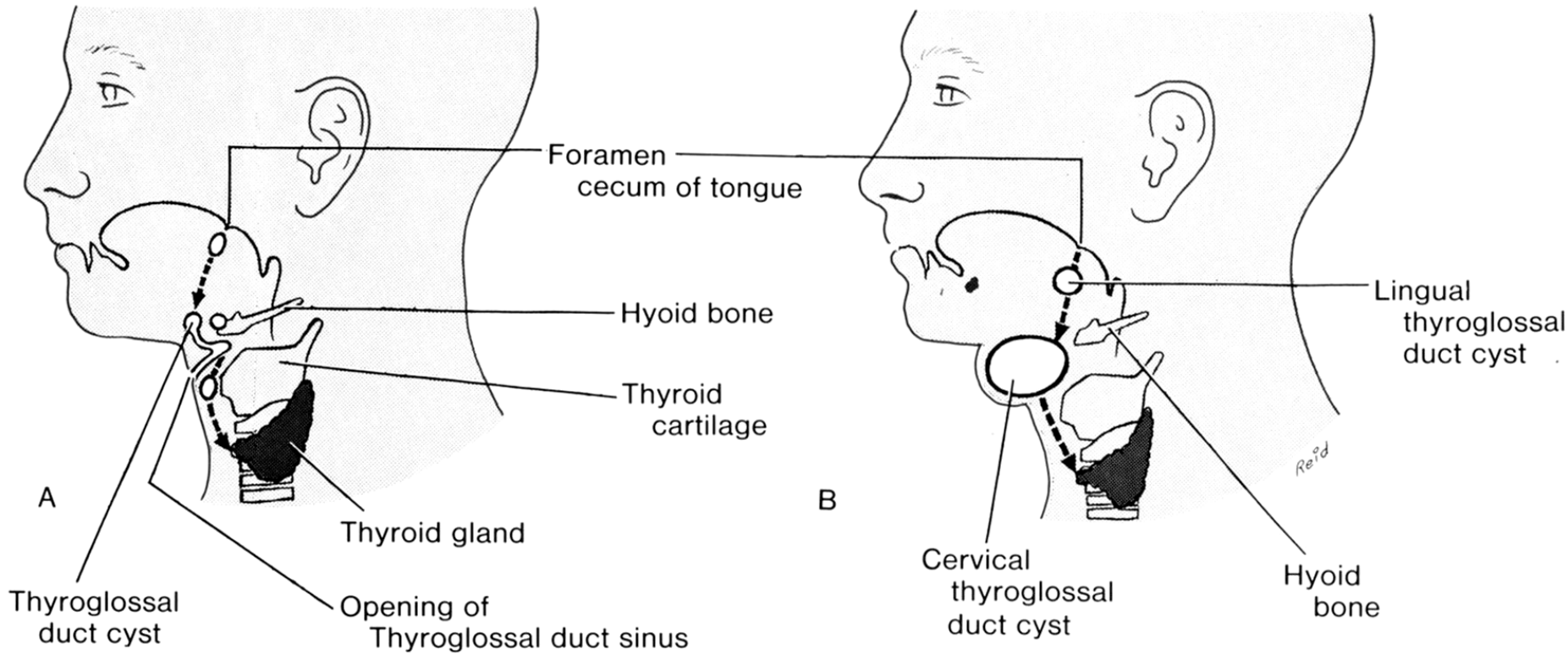


From Moore & Persaud 2003

Ectopic Thyroid Tissue

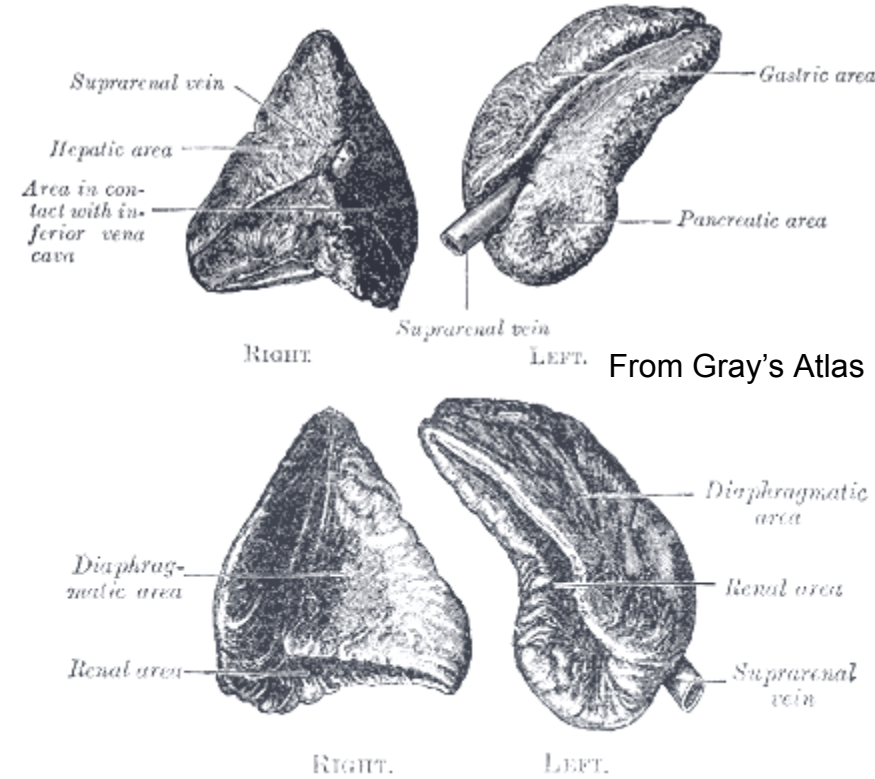
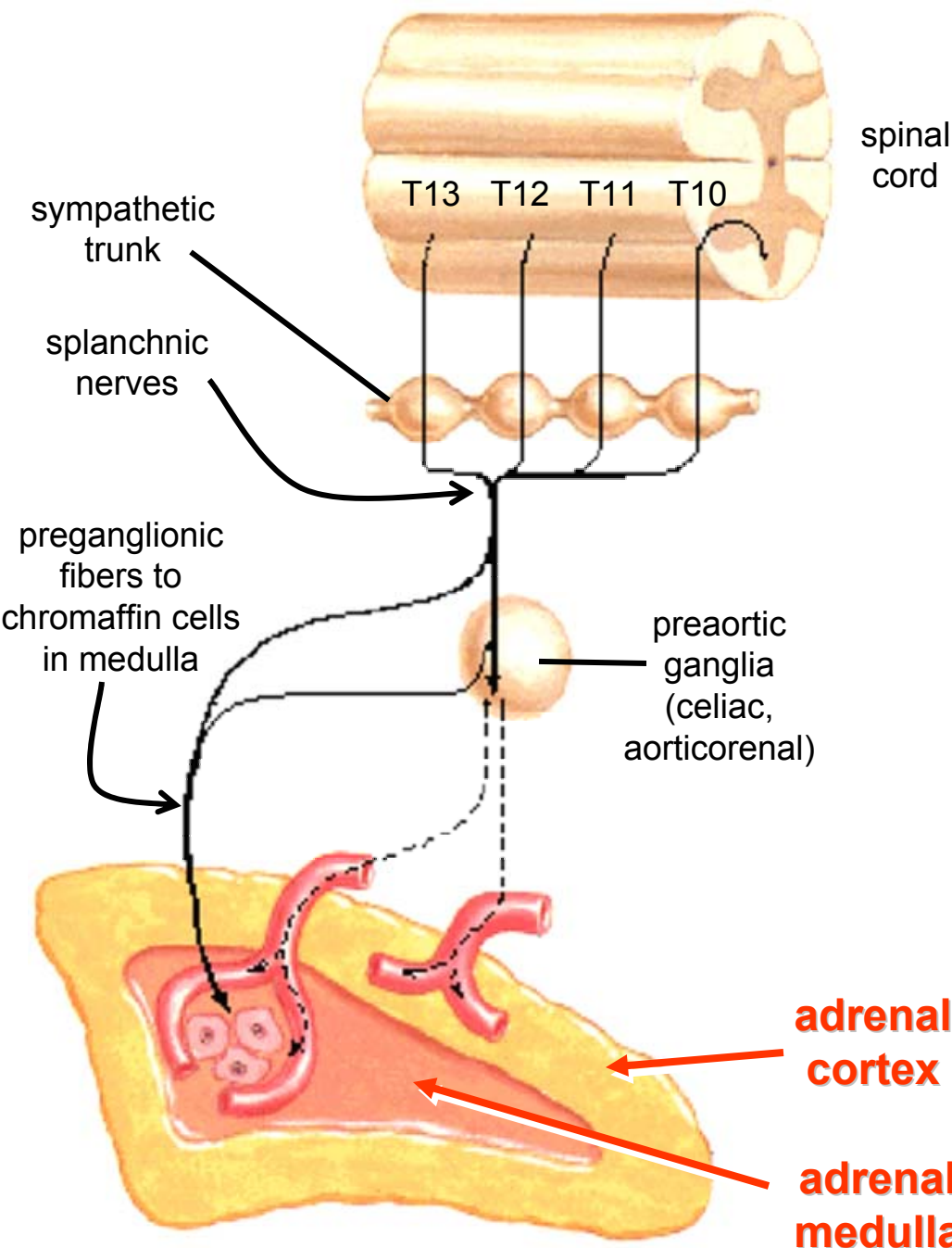


Possible Locations of Thyroglossal Duct Cysts



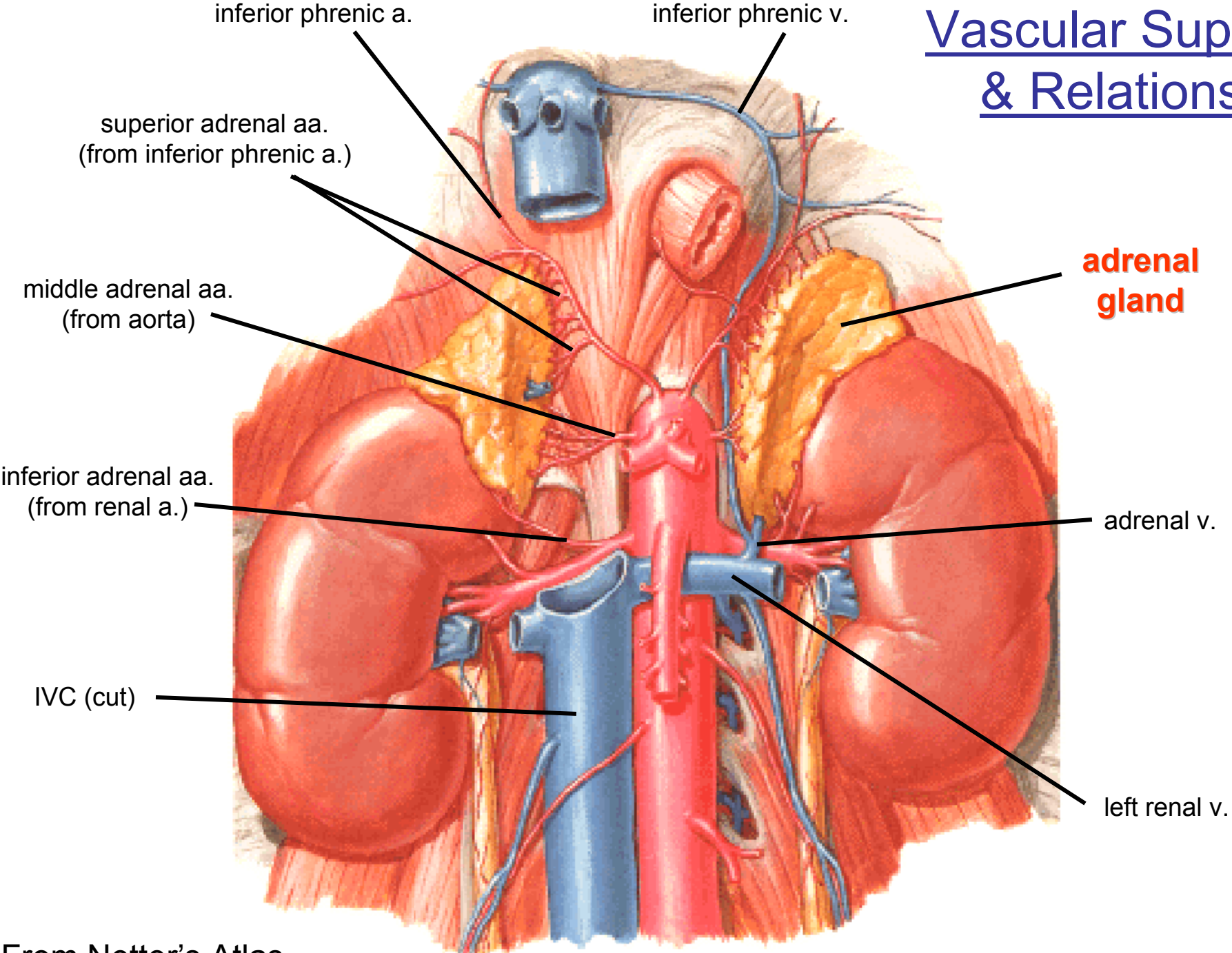
From Moore & Persaud 2003

Adrenal Overview

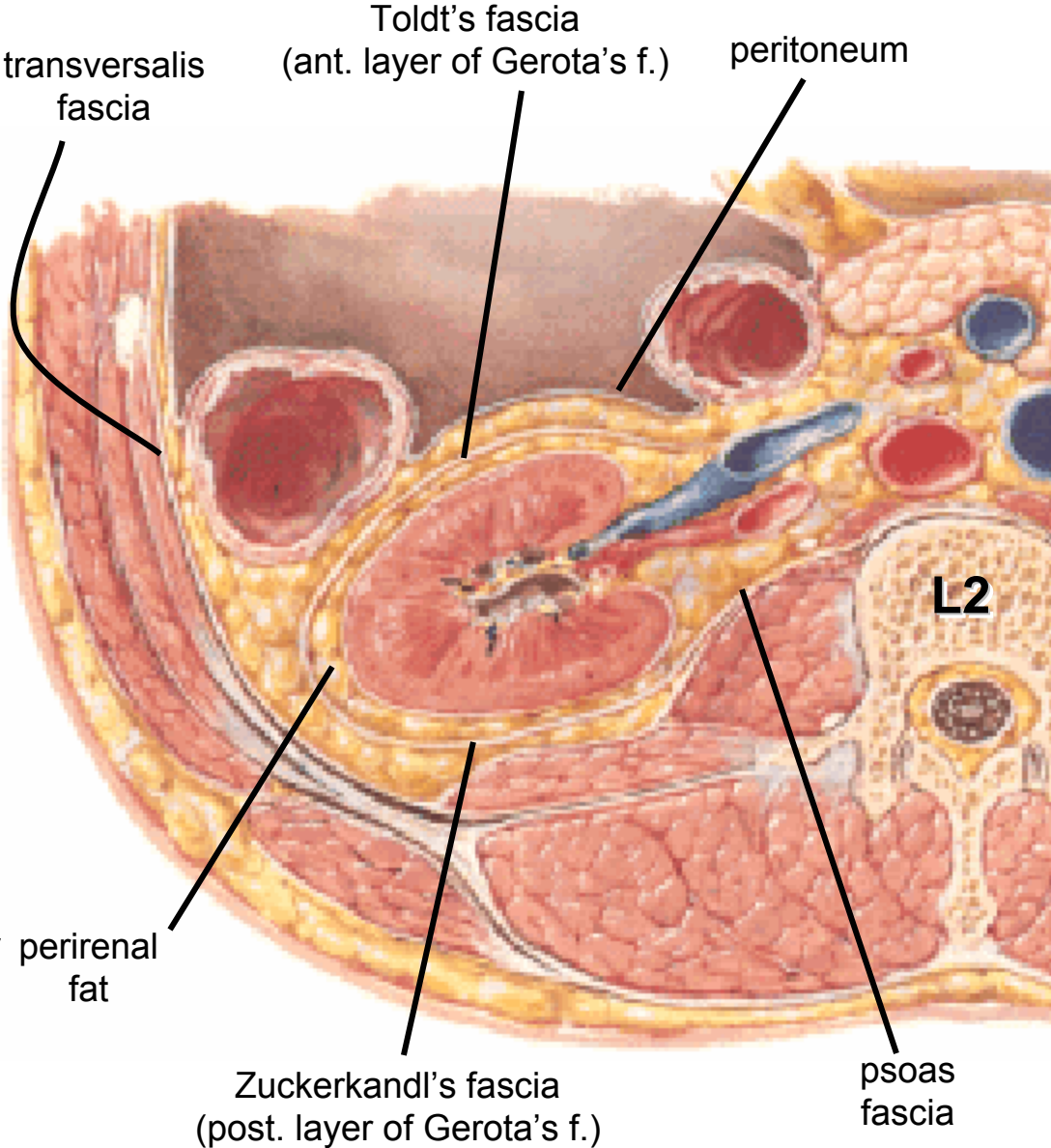
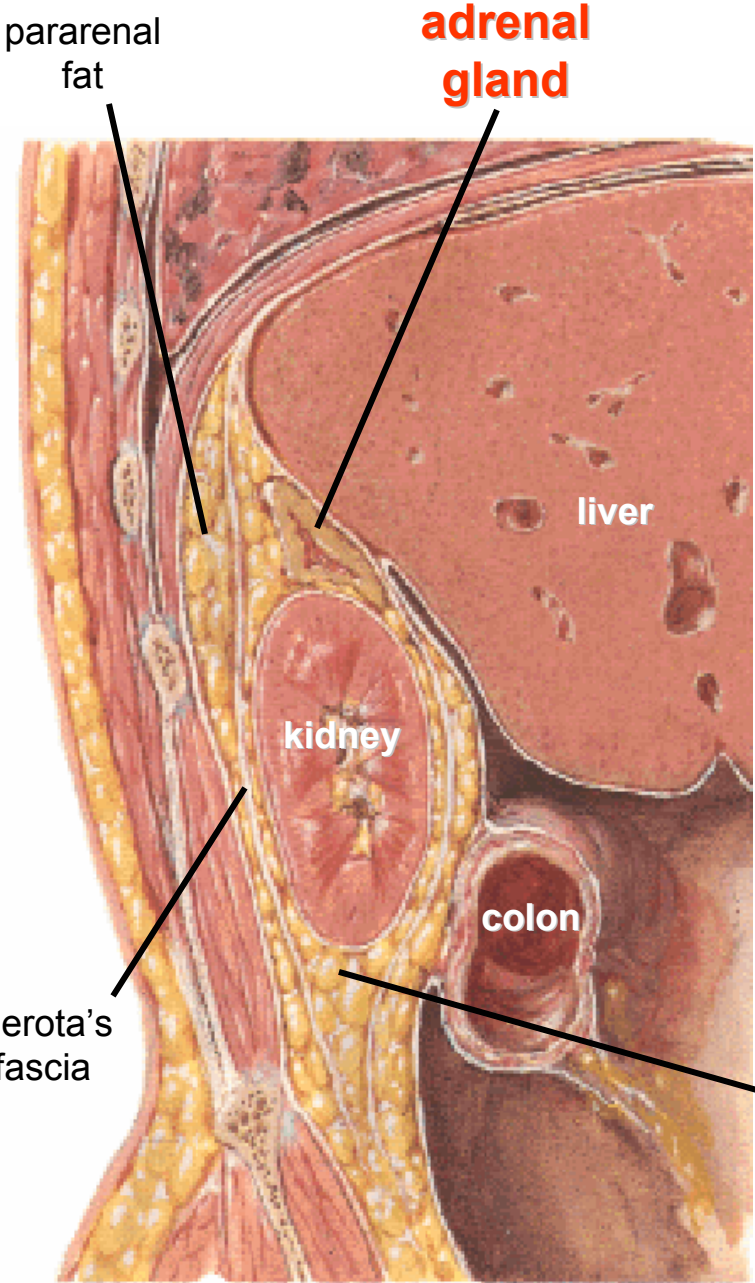


From Netter's Atlas

Vascular Supply & Relations



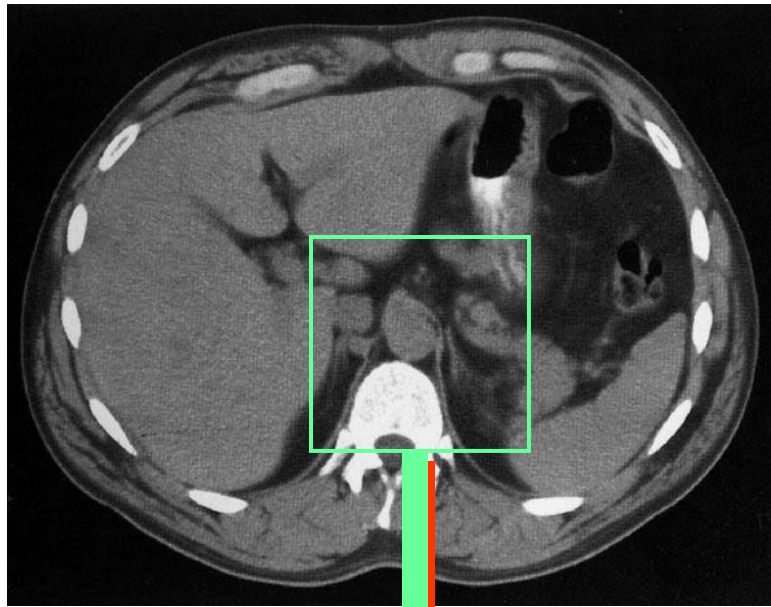
Perirenal fascia of Gerota



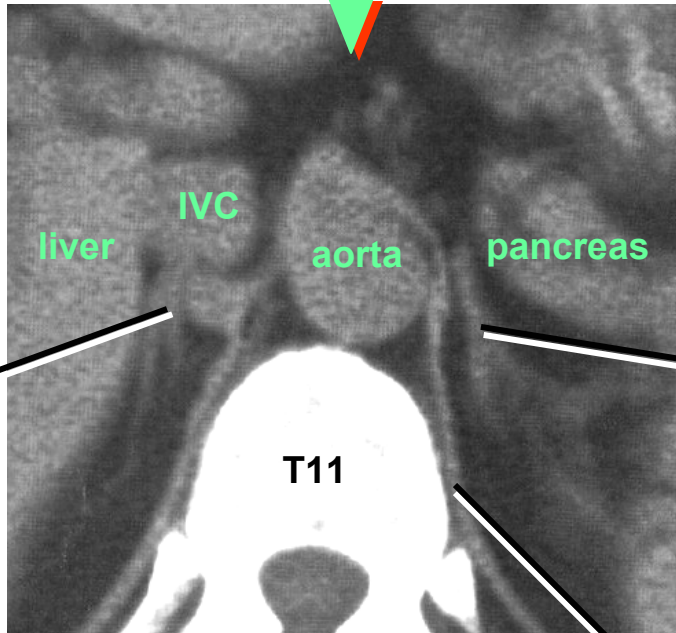
From Netter's Atlas

Imaging

Adrenal tumor



From web reference 3



From Ellis et al. 1991

crus of diaphragm

References

Print

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- Moore, K. L. and A. F. Dalley. 1999. Clinically Oriented Anatomy. Lippincott, Williams, & Wilkins, Baltimore.
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- Younes, N. A., and D. H. Badran. 2002. The cricothyroid space: a guide for successful thyroidectomy. Asian Journal of Surgery 25(3):226–231.

Web

1. Thyroid tumor: <http://www.auntminnie.com/ScottWilliamsMD2/nucmed/Tumor/Thallium/Thallium.htm>
2. Adrenal surgery: <http://www.emedicine.com/med/topic3018.htm>
3. Adrenal surgery: <http://www.surgery.wisc.edu/general/patients/endocrine.shtml>
4. Gray's *Anatomy of the Human Body*: <http://www.bartleby.com/107/>