



THYROID & PARATHYROID

Before going through the contents, make sure you check this [CORRECTION FILE](#) first

Note: this teamwork is involving only the anatomy part of the lecture, embryology part is covered by the Embryology team, Don't forget to check their work also.

The main 3 parts (layers) of the deep fascia or deep cervical fascia of the neck

1- Investing layer. it surrounds the sternocleidomastoid muscle (anteriorly), trapezius muscle (posteriorly), parotid, submandibular and sublingual gland (salivary glands).

2- Pretracheal layer. it surrounds the trachea & thyroid

3- Prevertebral layer. It surrounds the vertebral muscles of the neck.

Thyroid gland

Endocrine, butterfly shaped gland.	Each lobe is pear- shaped, with its apex (superiorly) reaches up to the <u>oblique line of thyroid cartilage</u> . (sternothyroid muscle insertion)
Consists of right & left lobes.	Its base (inferiorly) lies at the level of <u>4th or 5th tracheal rings</u> .
The 2 lobes are connected to each other in the midline by a narrow <u>isthmus</u> , which overlies the <u>2nd 3rd & 4th tracheal rings</u> .	Inside the pretracheal facial capsule, there is another capsule. So, it is surrounded by <u>2 membranes</u>
It is surrounded by a facial sheath derived from the <u>pretracheal layer</u> of the deep cervical fascia.	

NOTE:
Every gland in our body is covered by a capsule(layer), & we can say that the thyroid gland is composed of two capsules:
1-the pretracheal layer (outer capsule.)
2-fibrous C.T capsule (inner capsule)



3rd small pyramidal lobe is often present which projects from the **upper border** of the **isthmus** usually to **left** of middle line.

Pyramidal lobe is connected to **hyoid bone** by a fibrous or smooth muscular band called **levator glandulae thyroideae**.

This represents the fibrosed & obliterated **thyroglossal duct**.

Relation to the rounded posterior border

superior & inferior Parathyroid glands

anastomosis between superior & inferior thyroid arteries.

NOTE:
 -50% of people have the pyramidal lobe.
 -The pyramidal lobe is the remnant of the thyroglossal duct.

RELATION OF THYROID GLAND

Anterolaterally (4S)	Posteriorly (or posterolaterally)	Medially	
		Above	Below
1. Sternothyroid. 2. Sternohyoid. 3. Superior belly of omohyoid (most lateral) 4. Sternomastoid.(overlying the 3 muscles)	Carotid sheath & its contents which are (vagus nerve, common "& internal" carotid artery, internal jugular vein & deep cervical lymph nodes)	Larynx & pharynx	Trachea & esophagus
		Recurrent laryngeal nerve in between them (supplies the focal cords & the mucous of the larynx) & external laryngeal nerve	
		Cricothyroid (produces tension and elongation of the vocal folds so aids phonation) & inferior constrictor muscles	

Carotid sheath is also derived from the deep fascia.

ARTERIAL SUPPLY

Superior thyroid	Thyroidea ima	Inferior thyroid
<p>It is a branch from the external carotid artery</p> <p>It descends to the upper pole of the lobe, with the external laryngeal nerve(→vagus nerve→ superior laryngeal nerve)</p>	<p>If present, it arises from aortic arch(directly) or from brachiocephalic artery.</p>	<p>From the thyrocervical trunk of 1st part of subclavian artery,</p>
		<p>It ascends behind the gland to the level of cricoid cartilage</p>
		<p>Then it curves medially behind the carotid sheath.</p>
<p>It runs along the upper border of the isthmus to anastomosis with its fellow (from the other side)</p>	<p>It ascends in front of the trachea to reach the isthmus.</p>	<p>Then it reaches the posterior aspect of the gland & descends downwards.</p>
		<p>The recurrent laryngeal nerve crosses either in front or behind it .(or between 2 branches)</p>

NOTE:

Inferior thyroid artery has many branches such as:

- 1-ascending branch → anastomosis with the superior thyroid artery
- 2-descending branch → supply the postero-inferior pole of thyroid gland

Clinical notes

External laryngeal nerve	Recurrent laryngeal nerve (more dangerous)
<p>It runs close to the <u>superior thyroid artery</u> before turning medially to supply the <u>cricothyroid muscle</u>. High ligation of the superior thyroid artery during thyroidectomy places this nerve at risk of injury, so it should be ligated within the upper pole of the gland.</p>	<p>The <u>inferior thyroid artery</u> is closely associated with it. This nerve can be found , in a <u>triangle</u>*.</p> <p>The relationship of the recurrent laryngeal nerve and the inferior thyroid artery is highly variable in that the nerve can lie deep or superficial to the artery, or between the branches of the artery, and be different on either side of the neck. So, Consideration of this nerve and its branches must be given during thyroidectomy</p>
<p>Its lesion will cause <u>horsiness of voice</u>.</p>	<p>Its lesion may results in <u>impaired breathing & speech</u>.</p>

*The triangle is bounded:
 1-laterally→common carotid artery
 2-medially→ trachea
 3-superiorly→ thyroid lobe.

↓

NOTE: Bilateral lesion is more dangerous than unilateral lesion (because it will compensate from the other side)

VENOUS & LYMPHATIC DRAINAGE	Veins	Lymph
	<p>1-<u>Superior thyroid vein</u> → internal jugular vein</p> <p>2- <u>Middle thyroid vein</u> → internal jugular vein</p> <p>3- <u>Inferior thyroid vein</u> → left brachiocephalic vein</p>	<p>-Deep cervical. (chain alongside the internal jugular vein) -paratracheal lymph nodes.</p>

PARATHYROID GLAND

4 small ovoid bodies, about 6 mm. long.

They lie within the facial capsule of the gland, (between the 2 membranes).

2 superior parathyroid has a constant position at the middle of the posterior border of the gland.

2 inferior parathyroid usually at the level of the inferior pole.

They lie within the thyroid tissue or sometimes outside the facial capsule.

ARTERIES

superior & inferior thyroid arteries.

VEINS

superior, middle and inferior thyroid veins.

LYPHATIC NODES

Deep cervical & paratracheal lymph nodes.

NERVES

Superior & middle cervical sympathetic ganglia (vasomotor).
There is no known secretomotor innervation.

MCQ's

1-Which of the following tracheal cartilage located behind isthmus of thyroid gland:

- A- 1st, 2nd and 3rd tracheal rings.
- B- 2nd, 3rd and 4th tracheal rings.
- C- 3rd, 4th and 5th tracheal rings.
- D- 4th, 5th and 6th tracheal rings.

2-Thyroid gland surrounded by 2 membranes. It's capsule and?

- A- investing layer.
- B- pretracheal layer.
- C- prevertebral layer.
- D- carotid sheath.

3-Pyramidal lobe is connected to hyoid bone by a fibrous or muscular band called?

- A- thyrohyoid.
- B- levator glandulae thyroideae.
- C- sternohyoid.
- D- coricohyoid.

4-Which of the following muscles lies anterolaterally to the thyroid gland?

- A- inferior belly of omohyoid.
- B- sternohyoid.
- C- coricohyoid.
- D- levator glandulae thyroideae.

5-Which one of the following is posterior to thyroid gland

- A- sternomastoid.
- B- recurrent laryngeal nerves.
- C- trachea.
- D- common carotid artery.

6-Which one of the following is medial to thyroid gland?

- A- sternomastoid.
- B- vagus nerve.
- C- trachea.
- D- common carotid artery.

7-Inferior thyroid artery branch of?

- A- internal carotid artery.
- B- external carotid artery.
- C- thyrocervical of subclavian artery.
- D- aortic arch.

8-After thyroidectomy patient complained of hoarseness of the voice. When the surgeon ligation the superior thyroid artery he damaged the nerve near it. Which one of the following nerve is endanger in ligation of the STA?

- A- external laryngeal.
- B- recurrent laryngeal.
- C- internal laryngeal.
- D- superior laryngeal.

9-Middle thyroid vein drainages into?

- A- internal jugular vein.
- B- external jugular vein.
- C- left brachiocephalic vein.
- D- right brachiocephalic vein.

10-Where are the two superior parathyroid gland site in relation to the thyroid gland?

- A- at superior of the posterior border of the gland.
- B- at the middle of the posterior border of the gland.
- C- at the inferior of the posterior border of the gland.

THANK YOU FOR CHECKING OUR WORK GOOD LUCK DOCTORS

Key Answers:

- 1-B
- 2-B
- 3-B
- 4-B
- 5-D
- 6-C
- 7-C
- 8-A
- 9-A
- 10-B



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