Lecture 1

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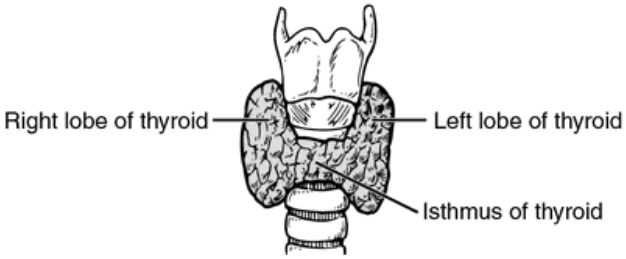
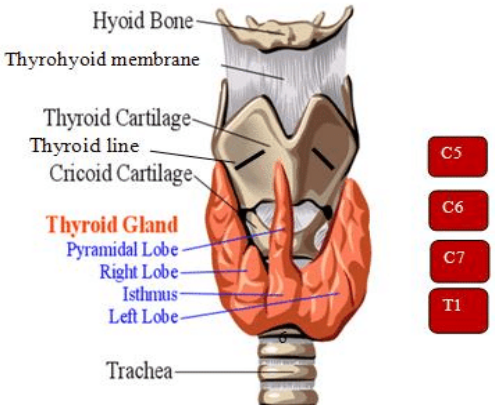
بسم الله الرحمن الرحيم

Thyroglossal duct disease

-The most common endocrine pathology are those who affect the (thyroid gland).

-The thyroid gland is situated in the central of your neck in both anterior triangles.





- consist of **two lobes divided by the isthmus.**

-Isthmus might be absence in 10% of cases.

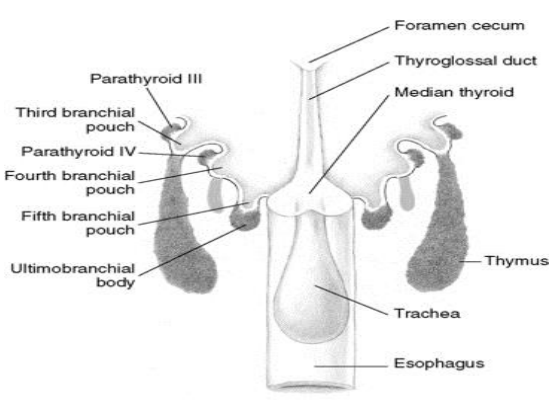
-pyramidal lobe is present only in 50% of cases.
-pyramidal lobe is considers as an embryological remnants of thyroglossal duct.
●**Embryologically:** thyroid gland develops as lateral compartment and m edial compartment.

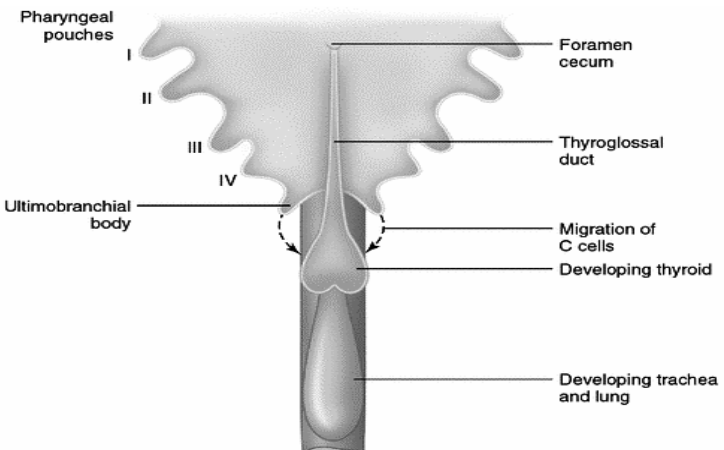
-The medial thyroid pyramidal → at the base of tongue and it descends along the thyroglossal duct which finally find its location on neck**.**

-lateral thyroid compartment originated from→ 4th fourth pharyngeal pouch.

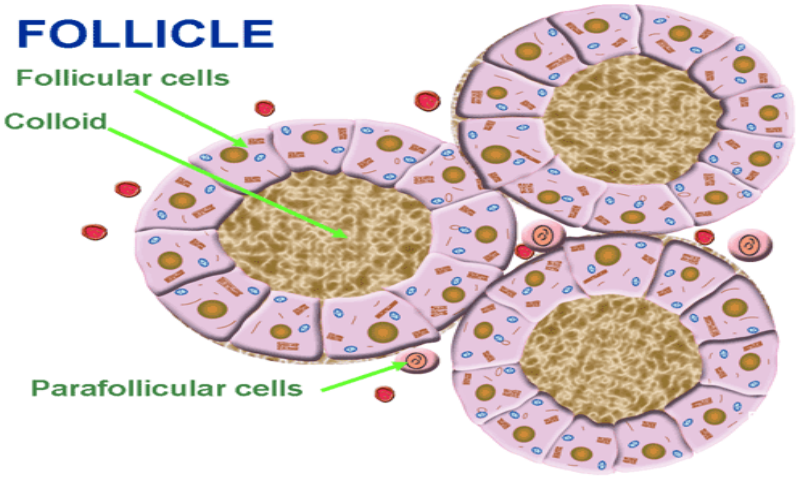
Embryologic of thyroid gland (lateral and median thyroid formation)

1- **lateral thyroid** develops from neural crest cells, 4th fourth pharyngeal pouch.
2-while the **median thyroid**, which forms from area of developing floor of tongue from behind it **passes from foramen cecum descend from it trough thyroglossal duct toward the root of neck** forming two lobes linked by isthmus and finally the isthmus found its **location on 2nd and 3rd tracheal rings** on midline neck.





●**Thyroid gland consists from <u>two types of cells:</u>**



1- Follicular cells(also called thyrocytes) : which responsible for synthesis ,production and secretion of the **<u>thyroid hormones</u>** thyroxine (**T4**) and triiodothyronine (**T3**)

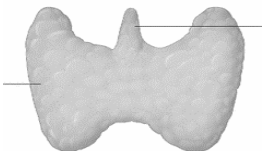
2- Parafollicular cells (known as C-CELLS): The function of these cells is to **<u>secrete calcitonin</u>**.

-They are located **adjacent and next to the thyroid follicles,**

- They are **neuroendocrine cells** in the thyroid **originated from neural crest.**

-Considered in **superior- lateral aspect of thyroid gland.**

-They are not present **(absent) in isthmus** so you don't find them in isthmus and you don't find them **in pyramidal lobe.** They are deficient centrally.



- pyramidal lobe is a normal rement

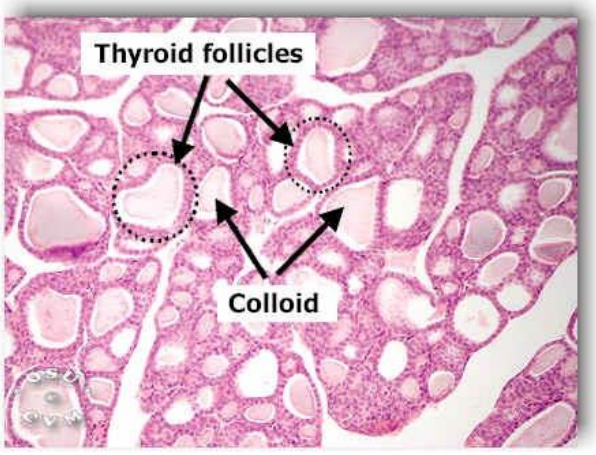
- **Follicular cells→ (thyroid hormone) T3, T4**
- **Para-follicular cells→ (calcitonin)**

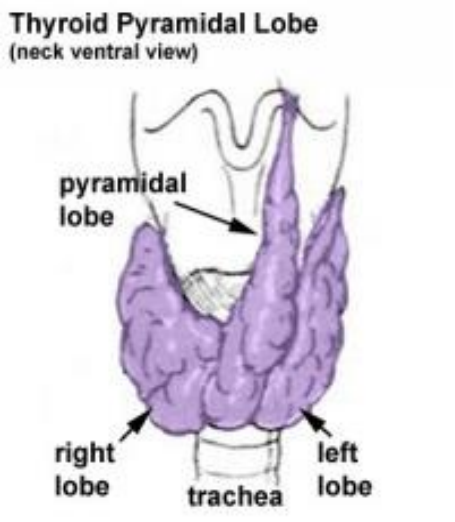
- The thyroid is a **butterfly-shaped** gland that sits low on the front of the neck. Your thyroid lies below your Adam's apple.

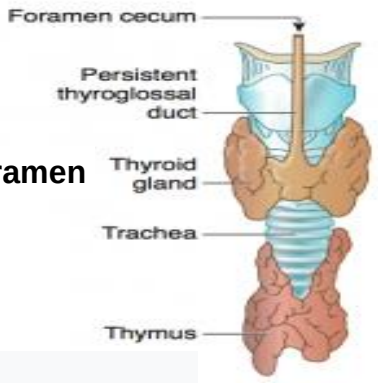
-Pyramidal lobe is a normal remnant of thyroglossal duct.

●Histology thyrocytes arraned in follicles this synthesis and secrete

Thyroid hormne T3, T4 and **storage in colloid.**







THYROGLOSSAL DUCT: a tract extending in tongue (foramen cecum), where isthmus find its final location between the second and third tracheal rings.

✹**Thyroglossal duct <u>has to disappear normally at birth.</u>**

(This tract from which the thyroid gland migrates <u>must disappear</u> until it reaches its final position in the neck but let's suppose this tract exists and has not disappeared).

✹ IF THYROGLOSSAL DUCT <u>not disappears</u> there will be →cystic generation. So there will be a cyst along this tract.

✹ **THYROGLOSSAL DUCT appears in 7% of people.**

✹ Thyroglossal duct cyst is found: in 1/3 of cases.

✹This **cyst is composed of thyroid tissue** (33% of cases have thyroid tissue during descend of thyroid there is **a few thyroid cells within this cyst).**

✹Q: WHERE IS THE MOST COMMON LOCATION OF THYROID CYST?

★AT OR BELOW THE LEVEL OF HYOID BONE.

NOTE: DURING PHYSICAL EXAMINATION YOU MUST KNOW THIS IS A CYSTIC OR SOLID.

-Is the lump at level of hyoid bone or just below the level of hyoid bone?? → you think this is a thyroglossal cyst.

● **You should disestablish the hallmark® characteristics physical finding of thyroglossal cyst**→you ask the patient to protrude his tongue or swallowing → because the attachment of cyst to the tongue **<u>THE MASS ON THE NECK WILL MOVES UPWARD during swallowing or on protrusion of the tongue</u>** because of its attachment to the **tongue(cecum of tongue) via the tract of thyroid descent.**

Q: WHAT IF THYROGLOSSAL CYST NOT MOVES BECAUSE IT'S TOO SMALL?

I must **place my hand** on it → ask patient to do same thing (protrude his tongue) because it's not always seen →then the cyst can be felt. ☺

Q: What is the next step if you diagnose your patient with a thyroglossal cyst?? What you will do?

Your next step is you need to confirm your diagnosis by using the **→ULTRASOUND (U/S).**

So you use U/S to:

1- To confirm your diagnosis.

2- To make sure there is no malignancy.

✹**I need to asses this cyst or features witch might suggest malignancy or present of cancer within this cyst.**

In U/S you have to make sure of diagnosis if the cyst have sings of carcinogenic.

✹QUESTION: WHAT ARE THE FEATURES WHICH INDICATE MALIGNANCY?

1) Cyst have solid component.

2) Area of microcalcification.

↳**Then If there were these two signs→ you should do Fine needle aspiration "FNA"; to make sure it's cancer or not because the management is differ.**

✹If there is **no this two features or signs of malignancy** and it was just a purely cystic lesion without cancer → you will not go for cytology fine needle aspiration (NO NEED).

✹If there is **solid component or microcalcification** →you have to do FNA fine needle aspiration.

Q: What is the most common cancer of thyroglossal duct cyst?☠

☠Answer is → **papillary carcinoma** ,which originate from thyroid tissue

Q: What is the second 2nd most common cancer of thyroglossal duct cyst? → **squamous cell carcinoma** SCC.☠

●**Lingual thyroid: Thyroid tissue in base of tongue** (an abnormal mass of ectopic thyroid tissue seen in base of tongue caused due to embryological aberrancy in development of thyroid gland).

◎**Lingual thyroid is:**

1) Developmental thyroid anomaly

2) Caused by failure of gland to descend from its angle

3) Must do U/S to see if there is thyroid tissue.

Why you do U/S? → to make sure if there is a thyroid gland tissue or not before you do thyroidectomy because if there was no thyroid tissue and you remove it then you must give the patient supplements (thyroxine) so don't miss this point.

●**Treated only if there is:**

1) OBSTRUCTION SYMPTOMS
2) BLEEDING
3) CANCER

✹How to manage the thyroglossal cyst?

✹In the past surgeons was only remove the cyst and the rate of recurrence among patients after remove cyst only is very high.

◎ RECUURENCE RATE was 60%

Why thyroglossal cyst has high rate of recurrence after remove it? → answer is because thyroglossal cyst defined as a cystic generation of thyroglossal duct. So it's cystic generation of the tract. → I HAVE TO REMOVE THE CYST + WHOLE TRACT because there is a 60% CHANCE OF RECURRANCE RATE IF ONLY YOU DO CYSTECTOMY.

★How can you reduce the risk of recurrence

(very important)***

● To reduce the risk of recurrence you must do :
Cystectomy + Ductectomy (remove tract from pyramidal lobe all the way the central of foramen cecum).

●So you should remove:

1) WHOLE TRACT.

2) CENTRAL PART OF HYOID BONE.

3) THYROGLOSSAL CYST.

★ **ALL SHOULD BE EXCISED** #1+2+3 → SO THAT will ❶DECREASE THE RISK OF RECURRENCE.

★THIS WAY **MINIMIZE** THE RISK FROM 60% TO 10%.

★ YOU SHOULD **REMOVE THE WHOLE TRACT** NOT ONLY THE CYST , YOU HAVE TO REMOVE THE CENTRAL PART OF HYOID BONE , PLUS THE THYROGLOSSAL CYST

★THEN THE RISK OF RECURRENCE WILL BE 10% IF YOU REMOVE ALL OF THIS ENTIRE THREE 3 PARTS.

✹ Sistrunk procedure. <<<

This procedure is using for thyroglossal cyst removal.

-Which involved removal of the central portion of hyoid bone along with wide core of tissue from midline area between hyoid and foramen cecum together with the cystic mass.

✹MANAGEMENT OF THYROGLOSSAL CYST:(here doctor said he has two public publishing papers about the management so please go and read more about it because the management of thyrglossal cyst is important).

★QUESTION: What is the type of cancer that **IMPOSSIBLE** to develop in thyroglossal duct?

⊙ANSWER: **medullary carcinoma.**

Why?→because **parafollicular cells are neural crest origin they are NEVER found in isthmus or in thyroglossal duct** . (they might reach the hyoid bone).

★ **THE CANCER WHICH NEVER DEVELOP IS MEDULLARY CARCINOMA.** ((Because parafollicular cyst is not in the central , not found in isthmus ,, not in the duct.))

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