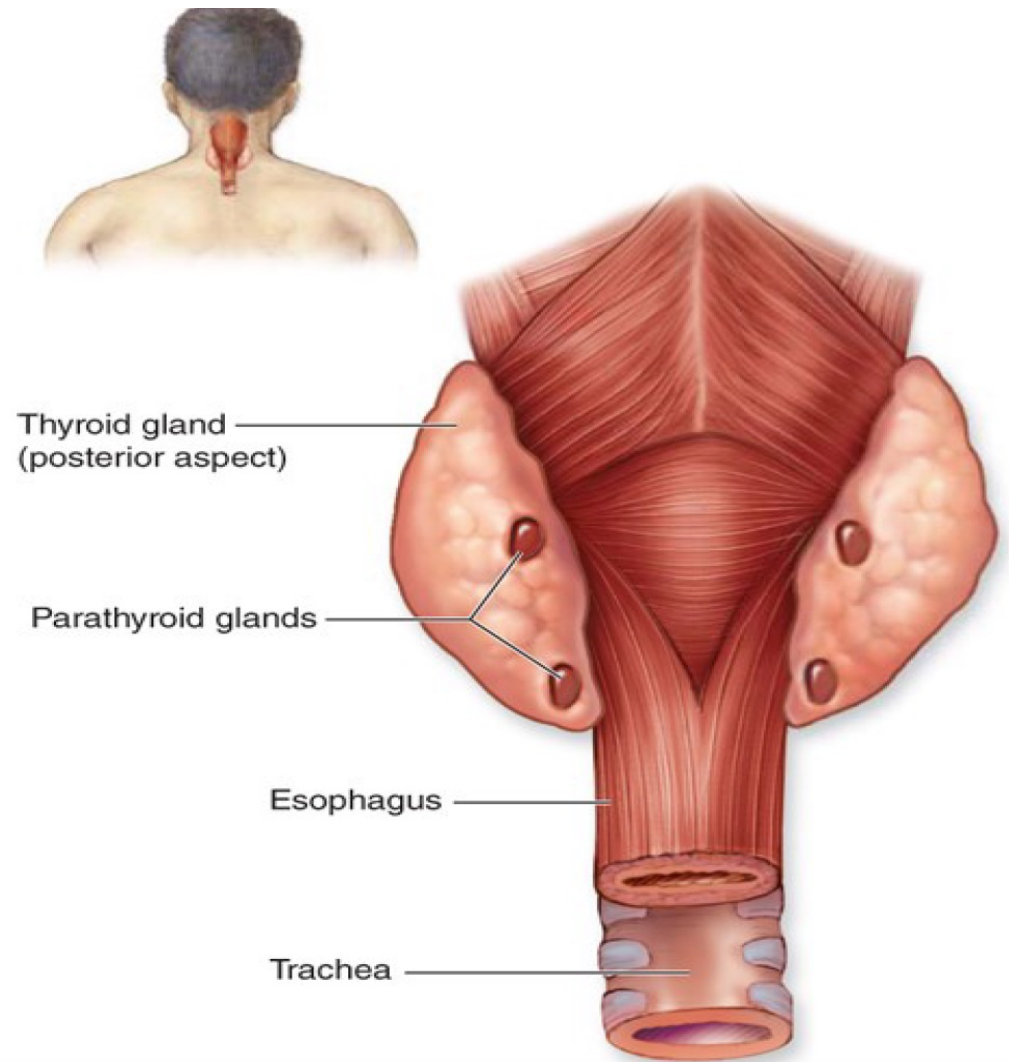




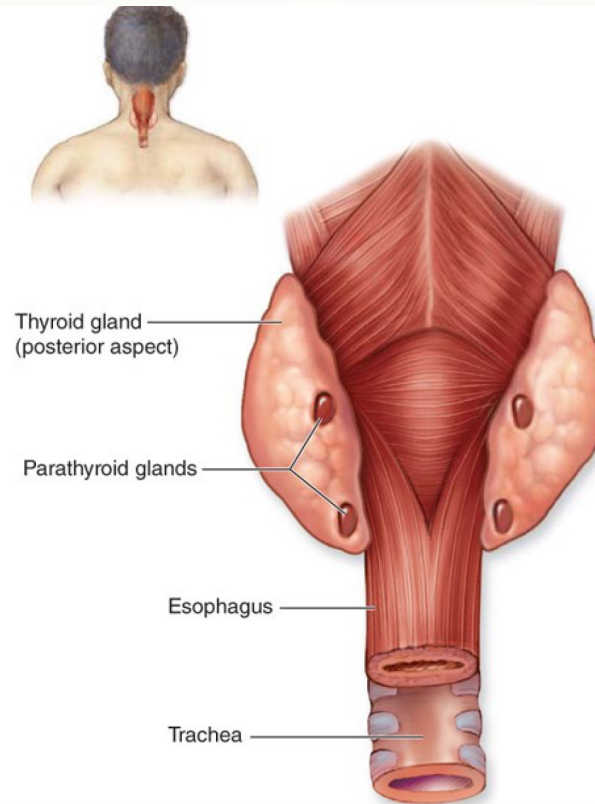
Parathyroid glands



Anatomy/ Characteristics

- Four small ovoid masses—3 × 6 mm—total weight 0.4 g.
- Located on the back of the thyroid gland, usually embedded in the gland's capsule.
- Closely related to the posterior border of the thyroid gland.

Increasing age---many secretory cells are replaced with adipocytes (>50%) of the gland in older people.



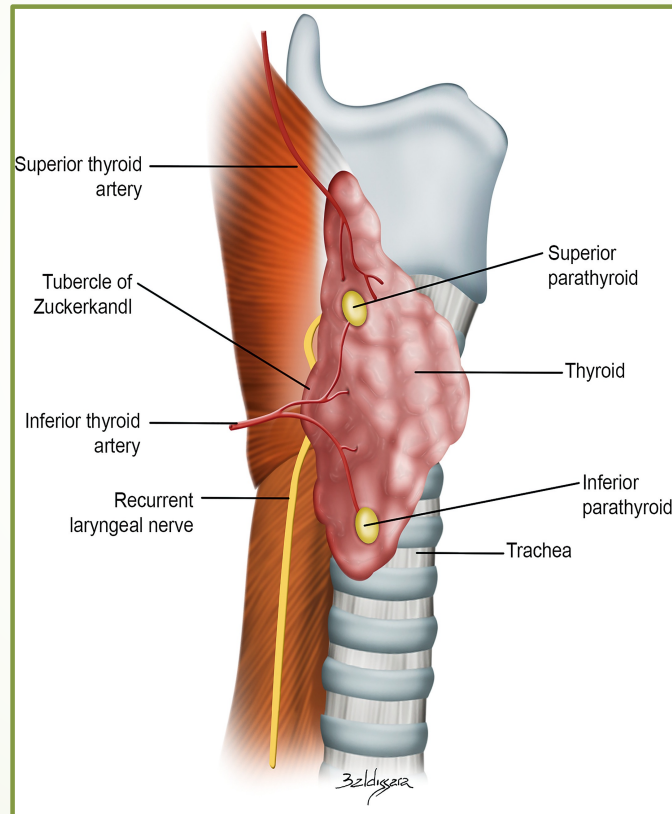
Blood supp./Venous D./ Lymph D.: same as thyroid

- The two superior parathyroid glands are the more constant in position--- lie at the level of the middle of the posterior border of the thyroid gland
- Contained within a thin capsule from which septa extend into the gland (septa).
- The two inferior parathyroid glands usually lie close to the inferior poles of the thyroid gland

Anatomy/ Embryology

Superior parathyroid glands

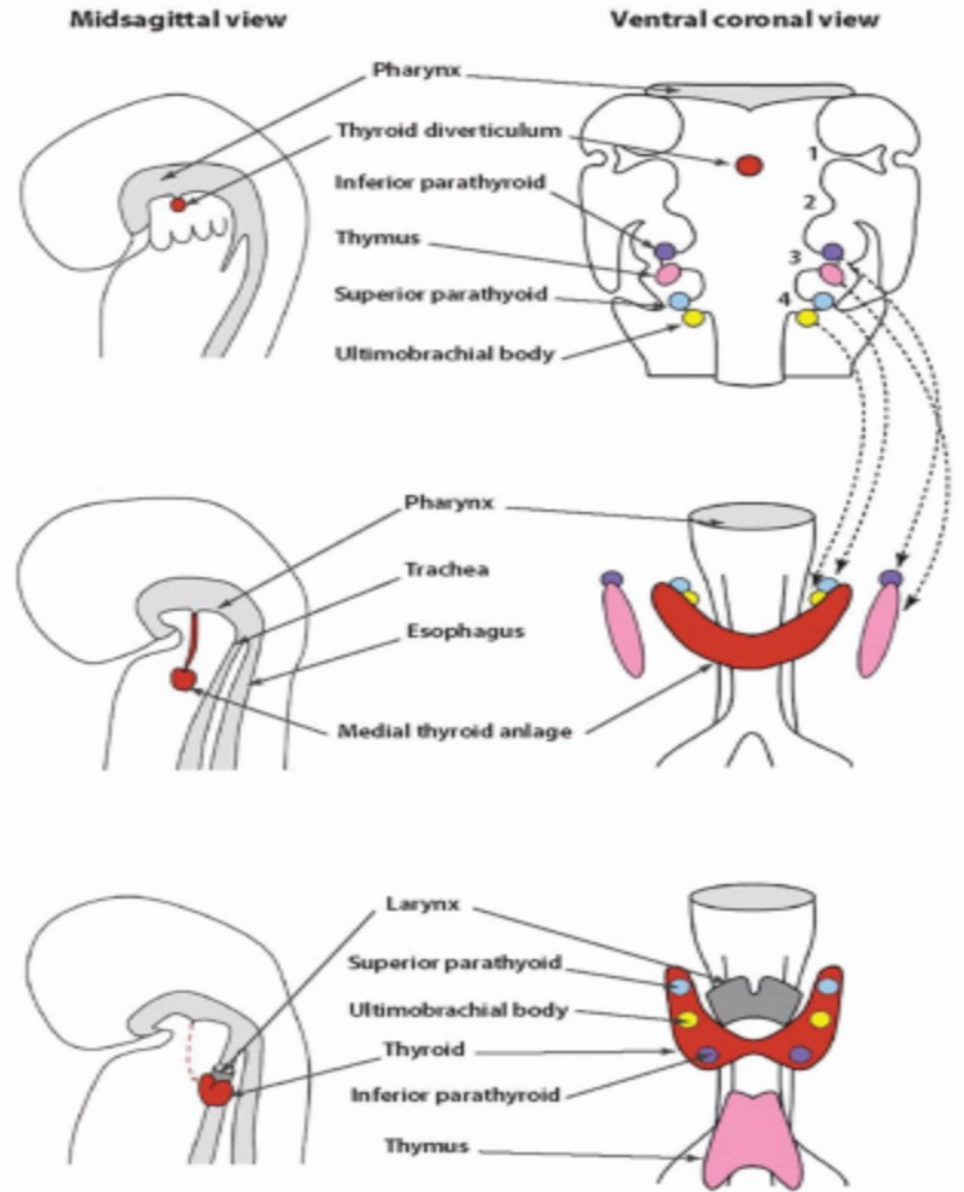
- Derived from the **fourth** pharyngeal pouch.
- Located near the posterolateral aspect of the superior pole of the thyroid, 1 cm superior to the junction of the recurrent laryngeal nerve (RLN), and the inferior thyroid artery.



Inferior parathyroid glands

- Derived from the **third** pharyngeal pouch.
- Located near the inferior poles of the thyroid glands, within 1-2 cm of the insertion of the inferior thyroid artery into the inferior pole of the thyroid.
- Location is much more variable than the superiors: it can be intra-thyroidal or within the thymus or other mediastinal structures, and can even be found along the aortic arch (16%).

Embryology



Structure

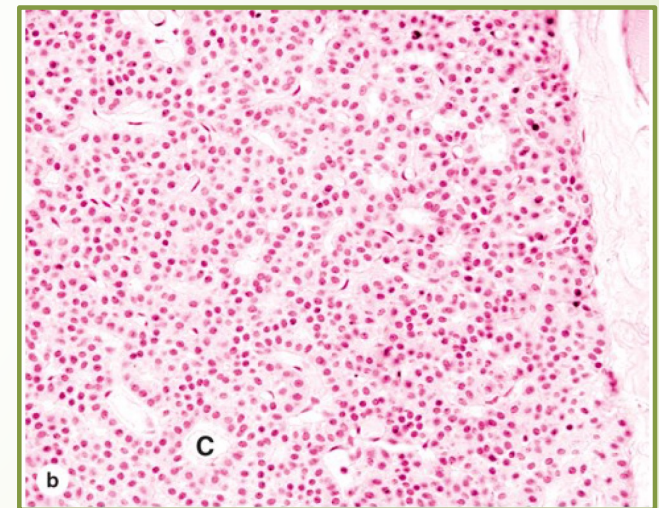
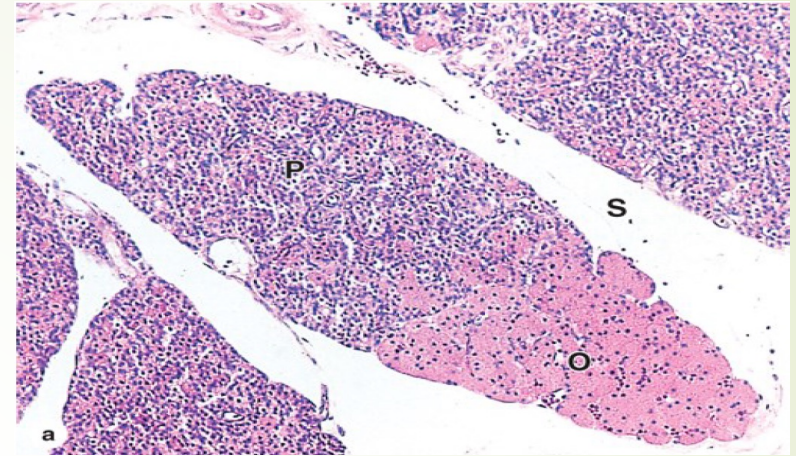
Chief cells:

- Manage the secretion of parathyroid hormone (PTH).
- Prominent Golgi apparatus and a developed endoplasmic reticulum (synthesis and secretion of the hormone)
- Smaller than the oxyphil cells, they are more abundant.

Oxyphil cells:

The purpose of these cells is not entirely understood.

Larger than the chief cells and seem to increase in number with age.



(a) A small lobe of parathyroid gland, septa (S),

(b) (b) Higher magnification shows that principal cells have round central nuclei and pale-staining cytoplasm



Surgical Considerations

- Have inconsistent locations between individuals and these locations can vary widely.
- Damage to the glands can occur during neck surgery, especially thyroidectomy.
- Preservation of as many parathyroid glands as possible.
- A single parathyroid gland should be sufficient!!!!
- Lifelong calcium and vitamin D supplementation may be required, when?
- Removal of both pairs of the parathyroid gland is extremely uncommon.

