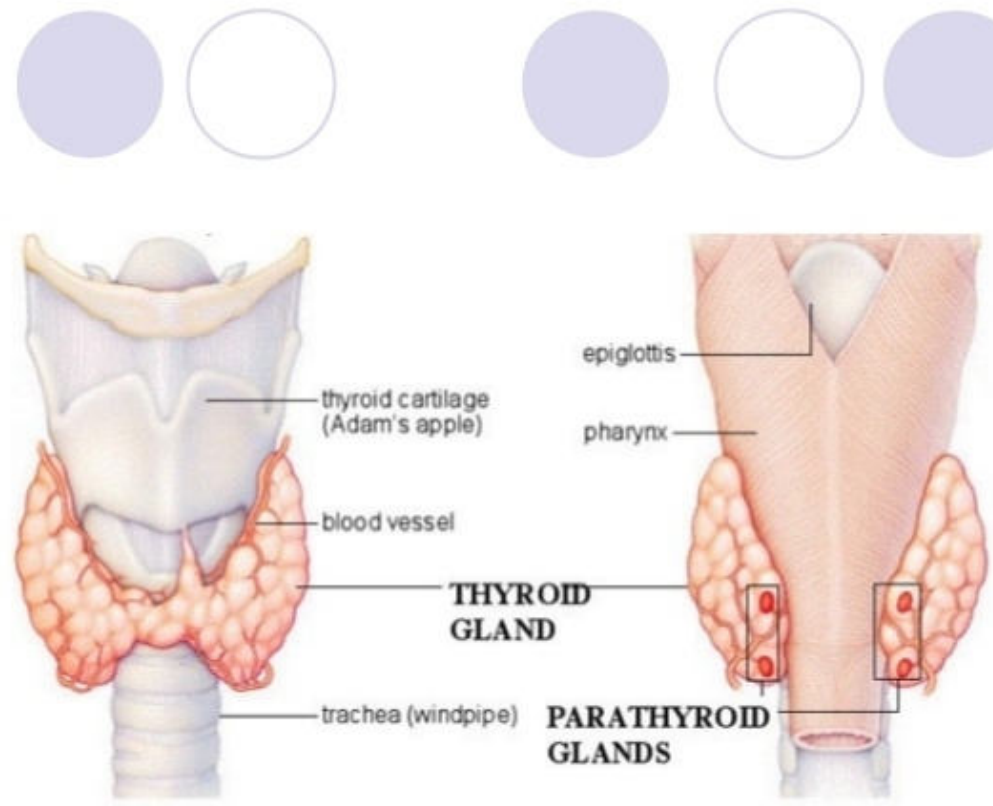
Anatomy of Parathyroid Glands

- Parathyroids are two paired endocrine glands located on the thyroid glands
- Hence the name



DEVELOPMENT

- Endodermal proliferation of 3rd and 4th pharyngeal pouches
- Dorsal aspect of 3rd – inferior parathyroid
- Ventral – thymus
- Inferior parathyroid migrates inferiorly along with the development of thymus
- 7th week – normal position

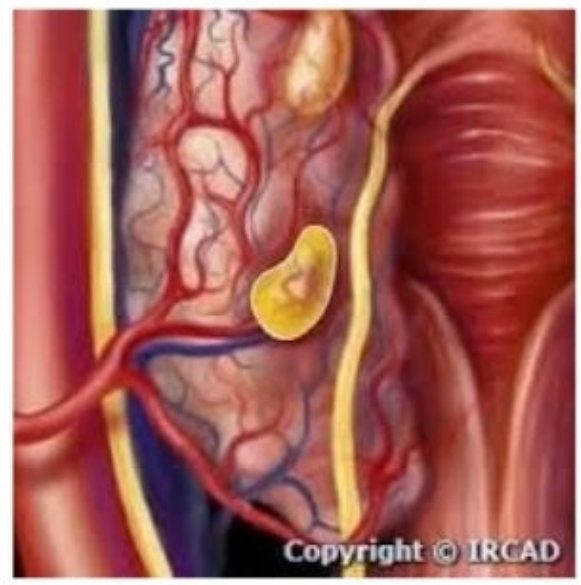
- Dorsal aspect of 4th pouch – superior parathyroid
- Ventral aspect and remnant of 5th pharyngeal poch – ultimobranchial bodies
- Sup parathyroid migrates caudally and medially
- 5th week – normal position

ANATOMY

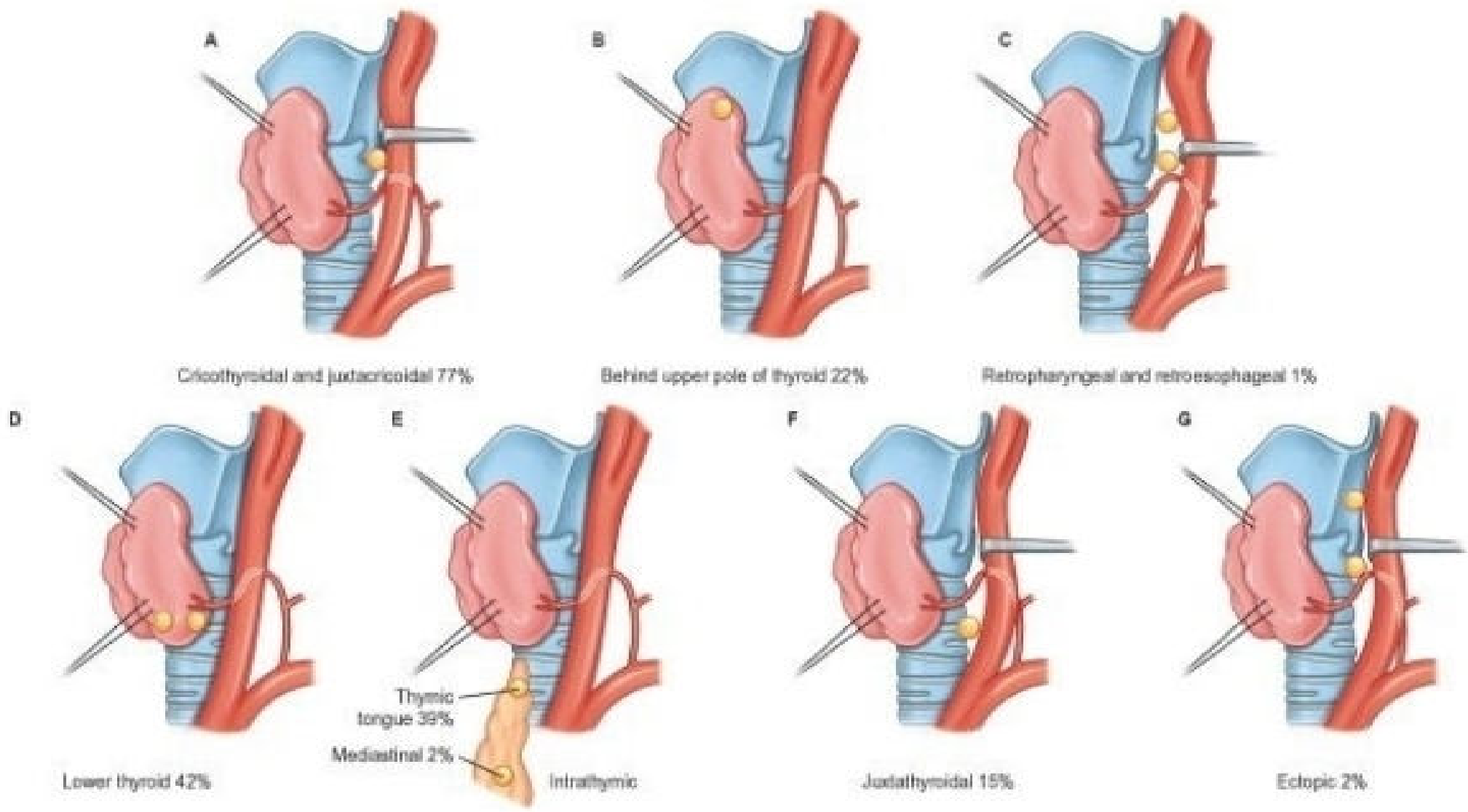
- Two pairs of glands 80 – 97%
- >4 – 13%, 3 – 3%
- Light yellowish to reddish brown
- Oval or lentiform shaped
- Bilobed 5%, multilobed 1%
- 5x3x2 mm
- 40 – 50 gms

- Superior parathyroids – more consistent in location
- Subcapsular
- Posterior part of upper half of thyroid lobe at the cricothyroid juncyion
- 1cm above the intersection between inferior thyroid artery and the recurrent laryngeal nerve

- Inferior parathyroids variable in location
- inferior, posterior or lateral to the lower pole 61%
- Inferior to lower pole in close relation to the thyrothymic ligament
- 26% within cervical part of thymus



- 2% in the mediastinal portion of thymus
- 0.2% in the mediastinum
- Failure of descent – located above the superior parathyroid glands surrounded by remnants of thymic tissue
- Superior parathyroids lie posterior and inferior parathyroid lie anterior to recurrent laryngeal nerves



- ARTERIAL SUPPLY
- The inferior parathyroid gland is supplied by the inferior thyroid artery
- approximately 10% of patients, the inferior thyroid artery is absent, most commonly on the left side. In these cases, a branch from the superior thyroid artery supplies the inferior parathyroid gland

- The superior parathyroid gland is also usually supplied by the inferior thyroid artery
- By an anastomotic branch between the inferior thyroid and the superior thyroid artery
- 20-45% of cases, the superior parathyroid glands receive significant vascularity from the superior thyroid artery

- in the form of a posterior branch of the superior thyroid artery given off at the level of the superior pole of the thyroid
- Venous drainage occurs into superior and middle thyroid veins

- Nerve supply is by the adrenergic smpathetic system
- Superior and middle cervical sympathetic ganglia
- Perivascular plexus of thyroid gland
- Vasomotor but not secretomotor

- MICROSCOPY
- Thin connective tissue capsule with intraglandular septa
- Chief cells – principle cells,
- Light, dark or clear cells
- Active chief cells hav large golgi complexes with numerous vesicles

- Clear cells are inactive cells with numerous glycogen granules
- Oxyphil cells – eosinophilic cell
- Rich in mitochondria