TO DAYS TOPIC -

DEEP STRUCTURES IN THE NECK

There are numerous deep structures in the neck.

They may be grouped as follows:

A) Glands – thyroid gland, parathyroid gland and submandibular gland.

B) Thymus .

C) Arteries- subclavian and carotid.

D) Veins- subclavian internal jugular and brachiocephalic.

E) Nerves- glossopharyngeal,vagus, accessory, hypoglossal, sympathetic chain and cervical plexus.

F) Lymph nodes and thoracic duct.

G) Viscera- oesophagus and trachea.

H) Scalene muscles.

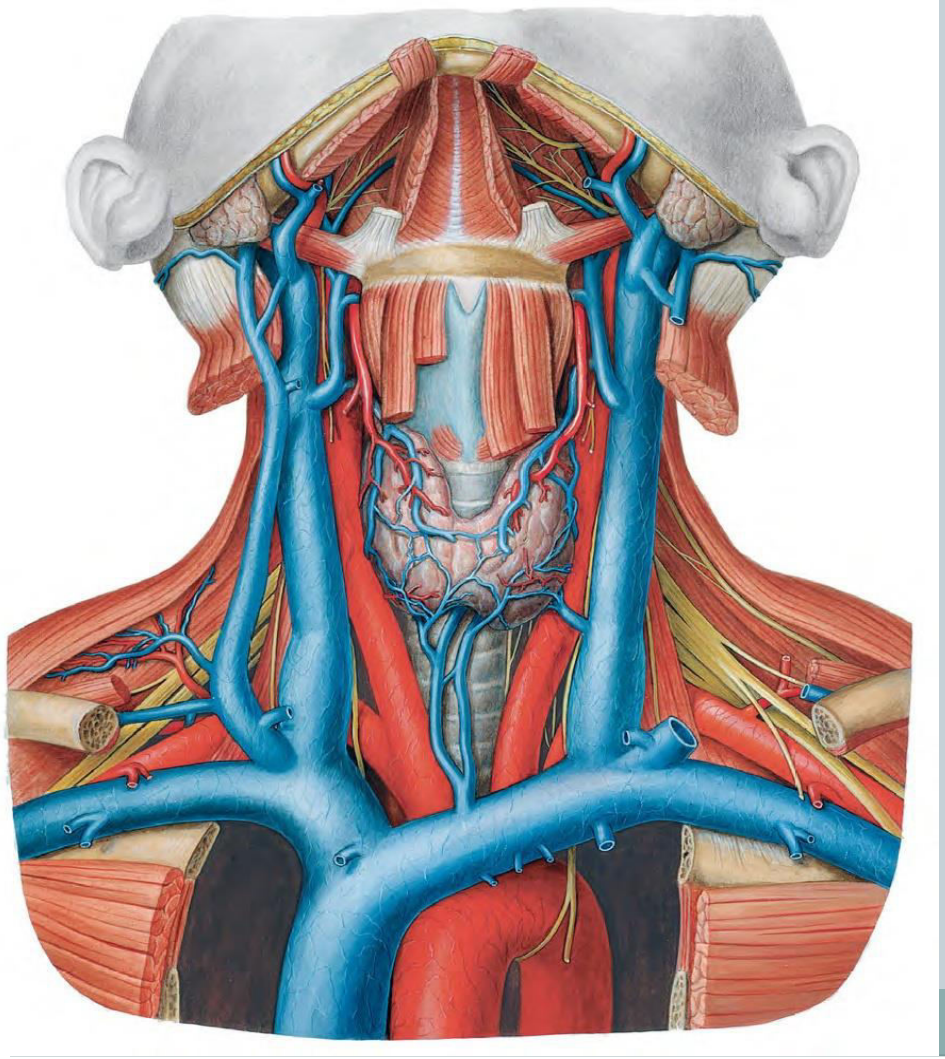
I) Cervical pleura and suprapleural membrane.

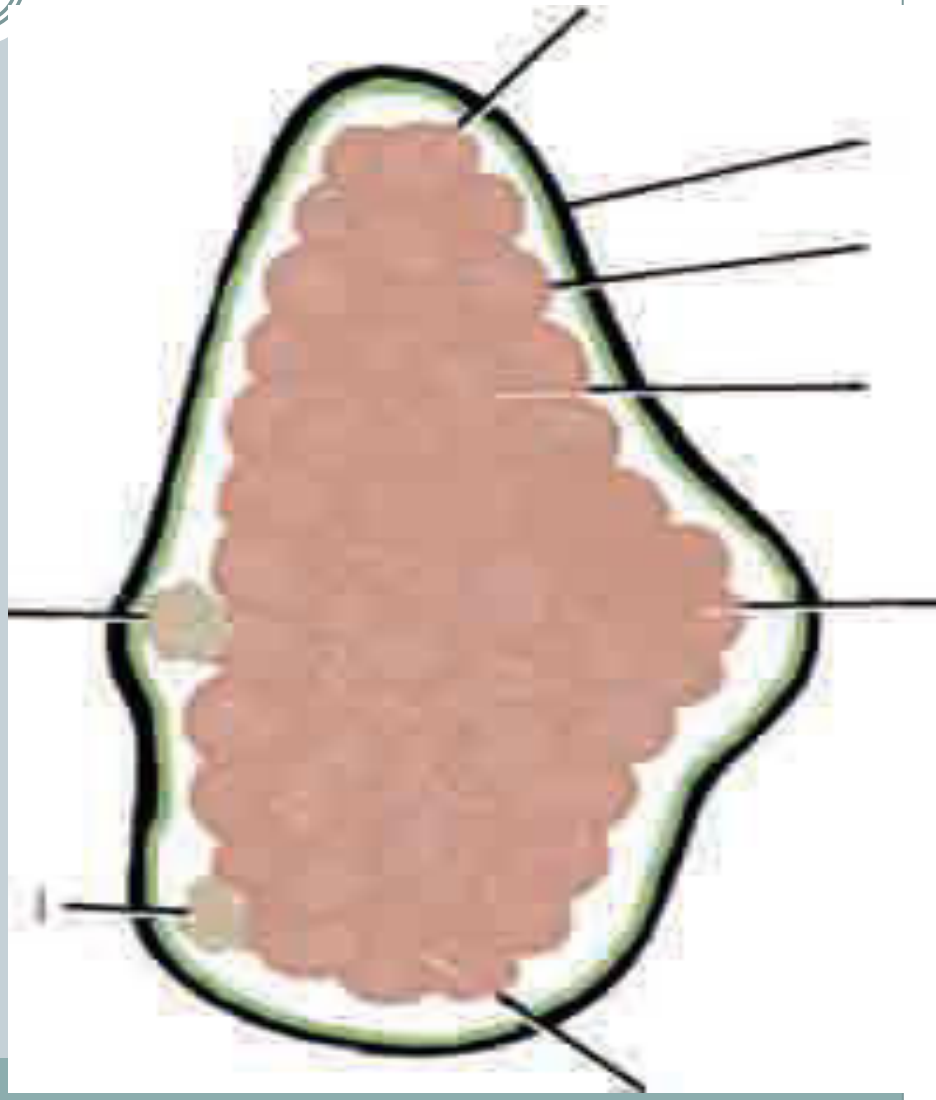
J) Styloid apparatus.

THYROID GLAND

- The thyroid gland is a brownish-red and highly vascular endocrine gland .
- Is placed in the lower part of the front and sides of the neck at the level with the fifth cervical to the first thoracic vertebrae.
- It is ensheathed by the pretracheal layer of deep cervical fascia.
- Consists of right and left lobes connected by a narrow, median isthmus.
- It usually weighs 25 g.

Thyroid gland





THYROID GLAND

Capsules of thyroid gland:

1. the true capsule- is the peripheral condensation of the connective tissue of the gland.
2. the false capsule- is derived from the pretracheal layer of the deep cervical fascia.
3. false capsule is thin along the posterior border but thick on the inner surface of the gland where it forms a suspensory ligament (of Berry),which connects the lobe to the cricoid cartilage.

THYROID GLAND

Relations :

- The lobes are conical in shape having- a) an apex, b) a base, c) three surfaces- lateral, medial and postero lateral. d) two borders- anterior and posterior.

- Lateral or superficial surface is convex and is coverded by- a) the sternohyoid, b) the superior belly of the omohyoid, c) the sternothyriod and d) the anterior border of the sternocleidomastiod muscle.

THYROID GLAND

- Medial surface is related to - a) two tube- trachea and oesophagus, b) two muscles- inferior constrictor and cricothyroid c) two nerves- externa laryngeal and recurrent laryngeal.
- Postero lateral or posterior surface- is related to the carotid sheath and overlaps the common carotid artery.
- Anterior border- is thin and is related to the anterior branch of the superior thyroid artery.
- Posterior border- is thick and rounded and is related to- a) the inferior thyroid artery, b) the anastomosis between the superior and inferior thyroid arteries, c) the parathyroid glands d) the thoracic duct only on the left side.

THYROID GLAND

The isthmus- connects the lower parts of the two lobes.

- It has: a) two surfaces- anterior and posterior, b) two borders- superior and inferior.
- Occasionally the isthmus is abscent.
- Anterior surface is covered by- a) both sternothyroid and sternohyoid muscles, b) the anterior jugular veins , c) fascia and skin.
- Posterior surface is related to the 2^{nd} to 4^{th} tracheal rings.
- Upper border is related to the anastomosis between the right and left superior thyroid arteries.
- Lower border is related with the inferior thyroid veins.

THYROID GLAND

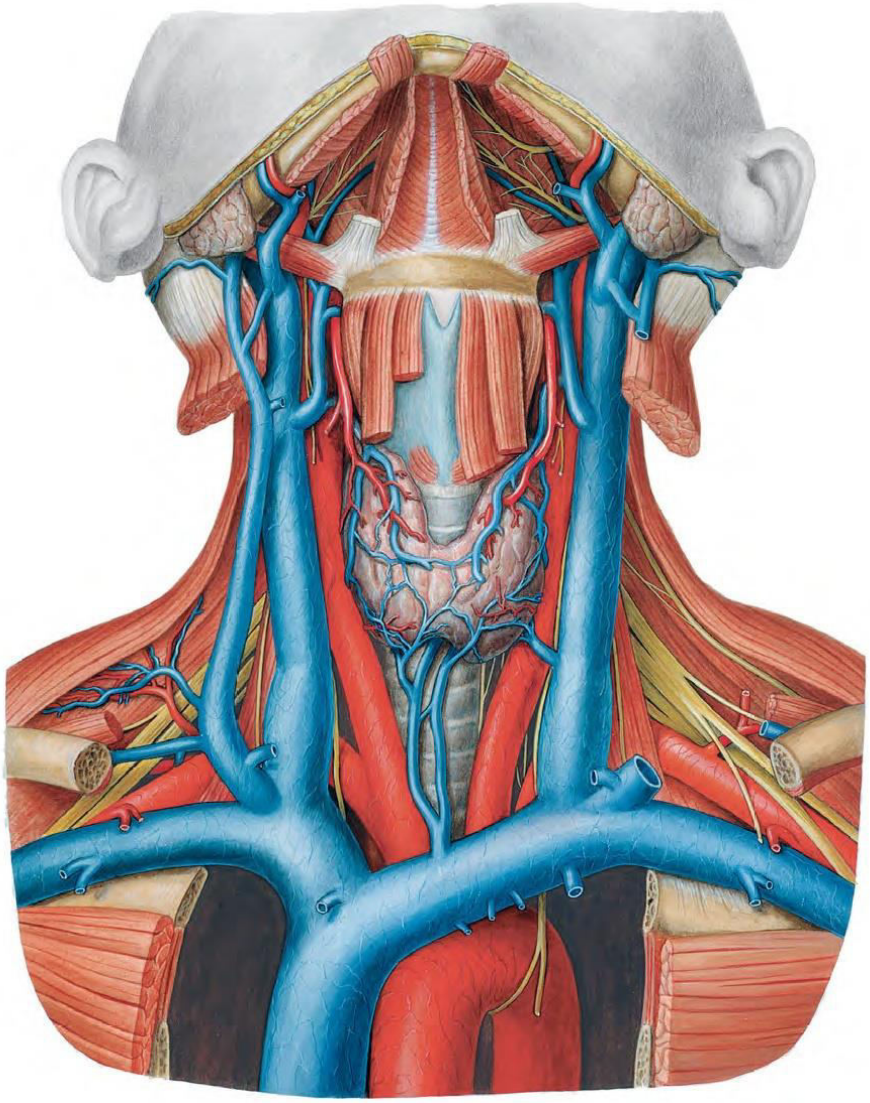
Arterial supply:

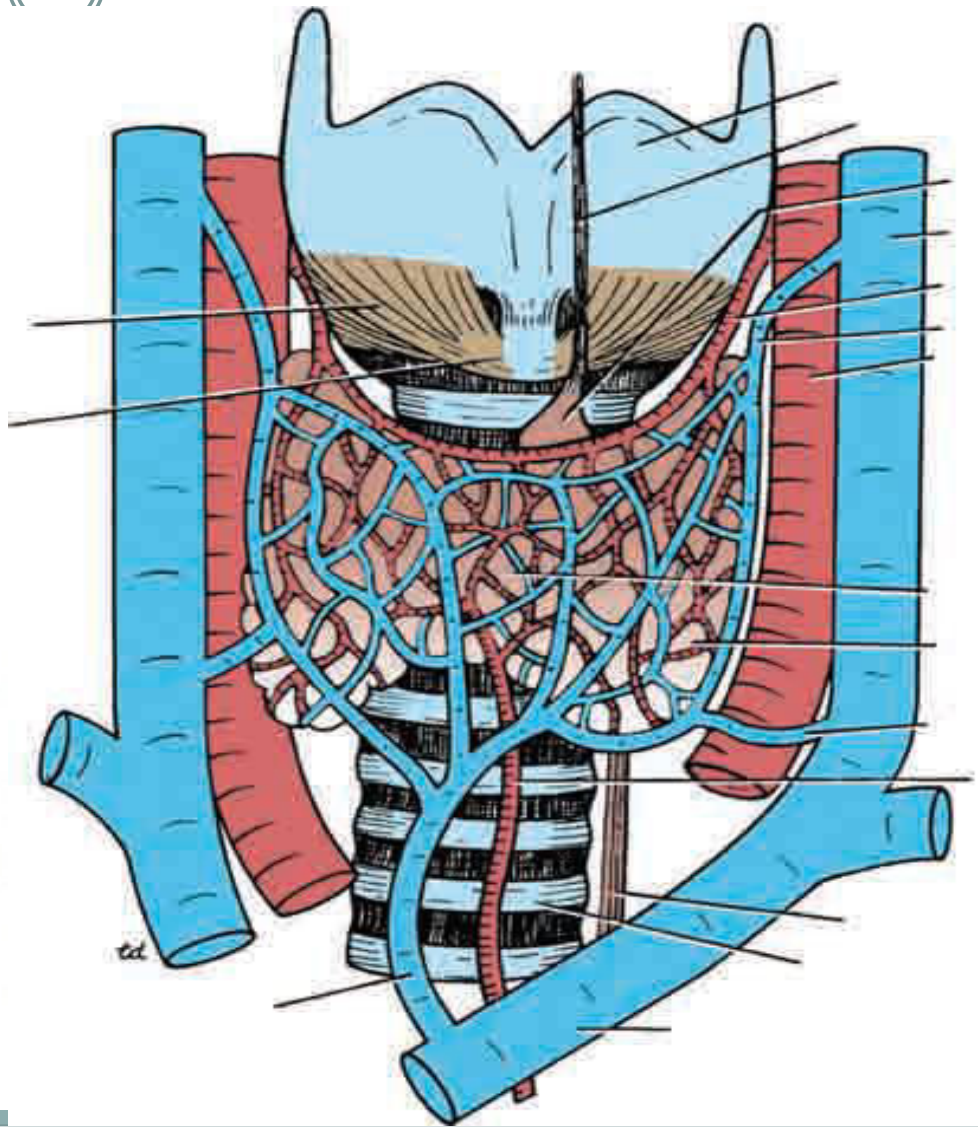
- ✓ Superior thyroid artery- branch of ext. carotid artery.
- ✓ Inferior thyroid artery- branch of the thyrocervical trunk.
- ✓ Arteria thyrodema- (3% individual) arises from the bracheocephalic trunk or from the arch of the aorta.

Venous drainage:

- ✓ Superior thyroid vein- drain into internal jugular vein.
  Middle thyroid vein- drain into internal jugular vein.
- ✓ Inferior thyroid vein-left brachiocephalic vein.

Blood supply of the thyroid gland





THYROID GLAND

Lymphatic drainage:

- From the upper part- upper deep cervical lymph nodes.
- From the lower part- lower deep cervical nodes.

Nerve supply:

- Mainly from the middle cervical ganglion.
- Partly from the superior and inferior cervical ganglion.

Histology and function.

The thyroid gland is made up of two types of secretory cells.

1. follicular cells lining the follicles of the gland secret triiodothyronin and tetraiodothyronin (thyroxin) which stimulates basal metabolic rate and somatic and psychic growth of the individual.

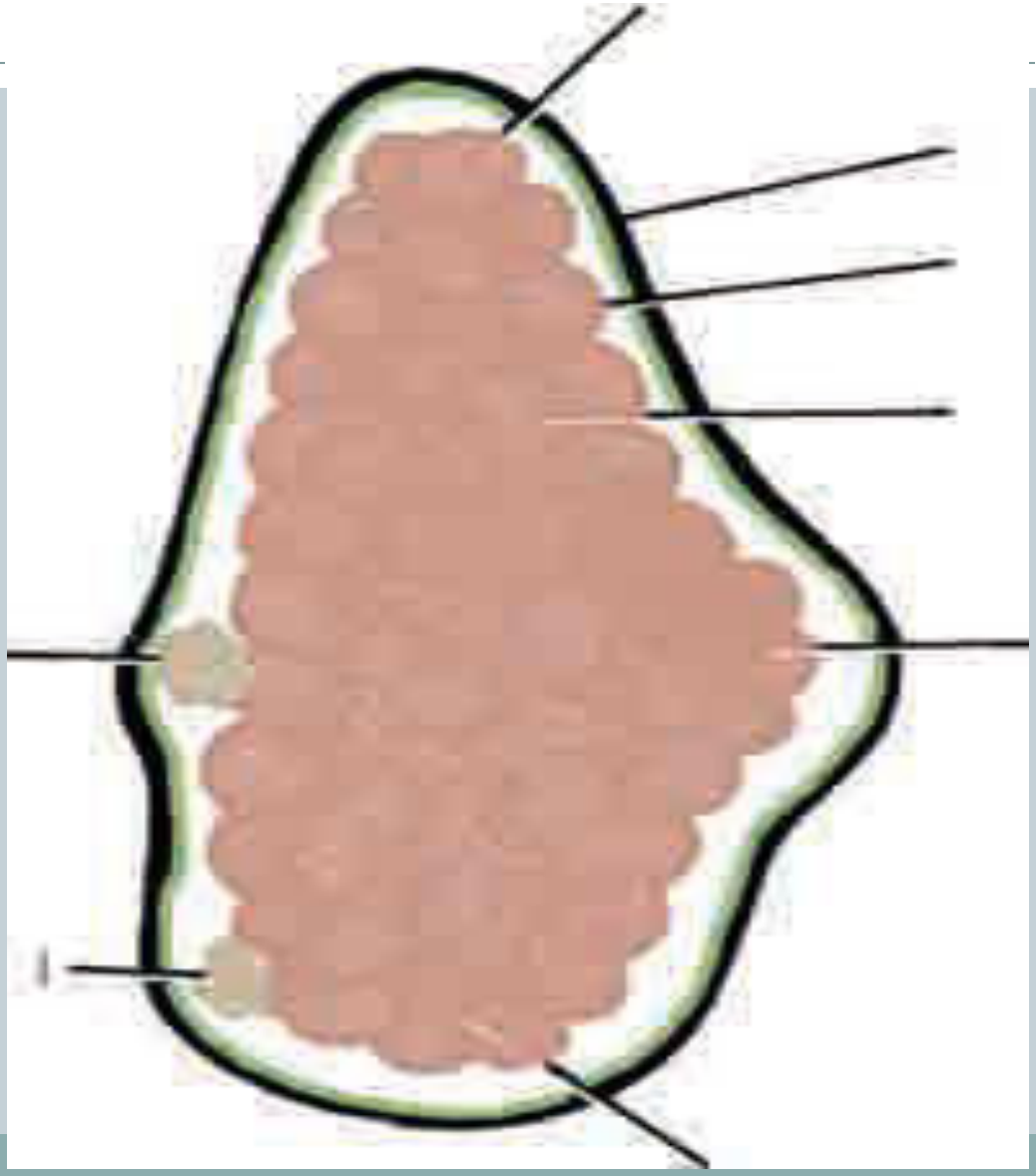
2.parafollicular cells (C cells)– lie in between the follicules. They secret thyro calcitonin which promotes deposition of calcium salts in skeletal and other tissues.

Parathyroid glands

- These are two pairs (superior & inferior) of small , yellowish-brown, ovoid endocrine glands.
- Each gland weighs about 50 mg.
- Usually lie on the posterior border of the thyroid gland within the false capsule.
- Superior parathyroids are develop from the endoderm of the 4th pharyngeal pouch.
- Inferior parathyroids are develop from the endoderm of the 3rd pouch.
- The parathyroids secret the hormone parathormone which controls the metabolism of calcium and phosphorus along with thyrocalcitonin.

Parathyroid glands

- The superior parathyroid glands- are more constant in location than the inferior and are usually to be found midway along the posterior borders of the thyroid gland.
- The inferior pair- are more variably situated and may be within the fascial thyroid sheath, below the inferior thyroid arteries and near the inferior lobar poles; or outside the sheath, immediately above an inferior thyroid artery; or in the thyroid gland near its inferior pole.



Parathyroid glands

Vascular supply and lymphatic drainage.

- Both parathyroid glands are usually supplied by the inferior thyroid arteries or from anastomoses between the superior and inferior thyroid arteries in 10–15% cases.
- the veins and lymphatic of the gland are associate with those of the thyroid and the thymus.

Parathyroid glands

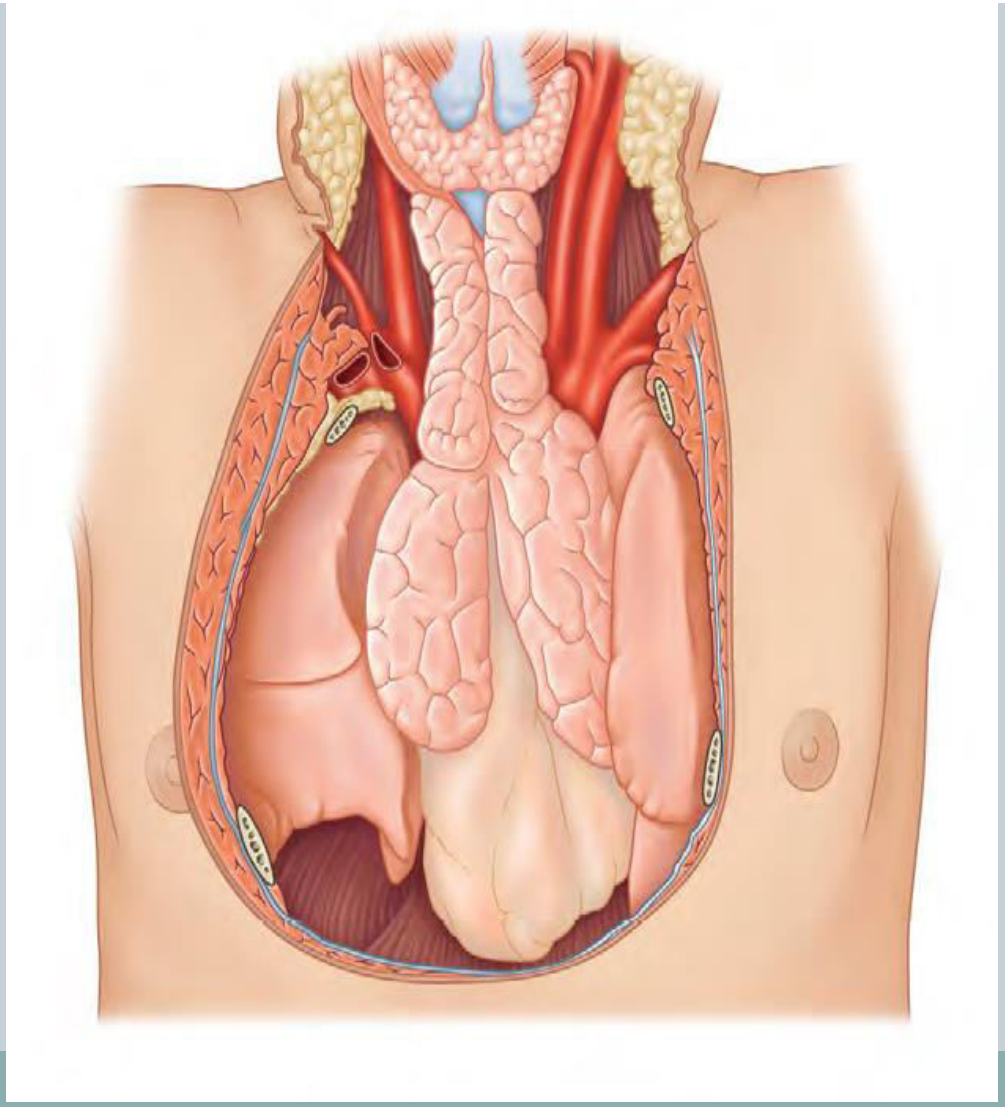
Innervation

- The nerve supply is sympathetic, either direct from the superior or middle cervical ganglia or via a plexus in the fascia on the posterior lobar aspects.
- Parathyroid activity is controlled by variations in blood calcium level:
- It is inhibited by a rise and stimulated by a fall.
- The nerves are believed to be vasomotor but not secretomotor.

Thymus

- The thymus is an important lymphoid organ, situated in the anterior and posterior mediastinum of the thorax.
- It is well developed at birth, continues to grow up to puberty and thereafter undergoes gradual atrophy and replacement by fat.
- The thymus is a bilobed structure, made up of two pyramidal lobes of unequal size which are connected together by areolar tissue.
- Each lobe develops from the endoderm of the 3rd pharyngeal pouch.
- The thymus weighs about 10-15 g at birth.

The thymus



Thymus

Blood supply: supplied by-

- Branches the internal thoracic and inferior thyroid arteries.
- Veins drain into the left brachiocephalic, internal thoracic and inferior thyroid veins.

Nerve supply:

- Vasomotor nerves are derived from the stellate ganglion.
- The capsule is supplied by the phrenic nerve and by the descending cervicalis.

Thymus

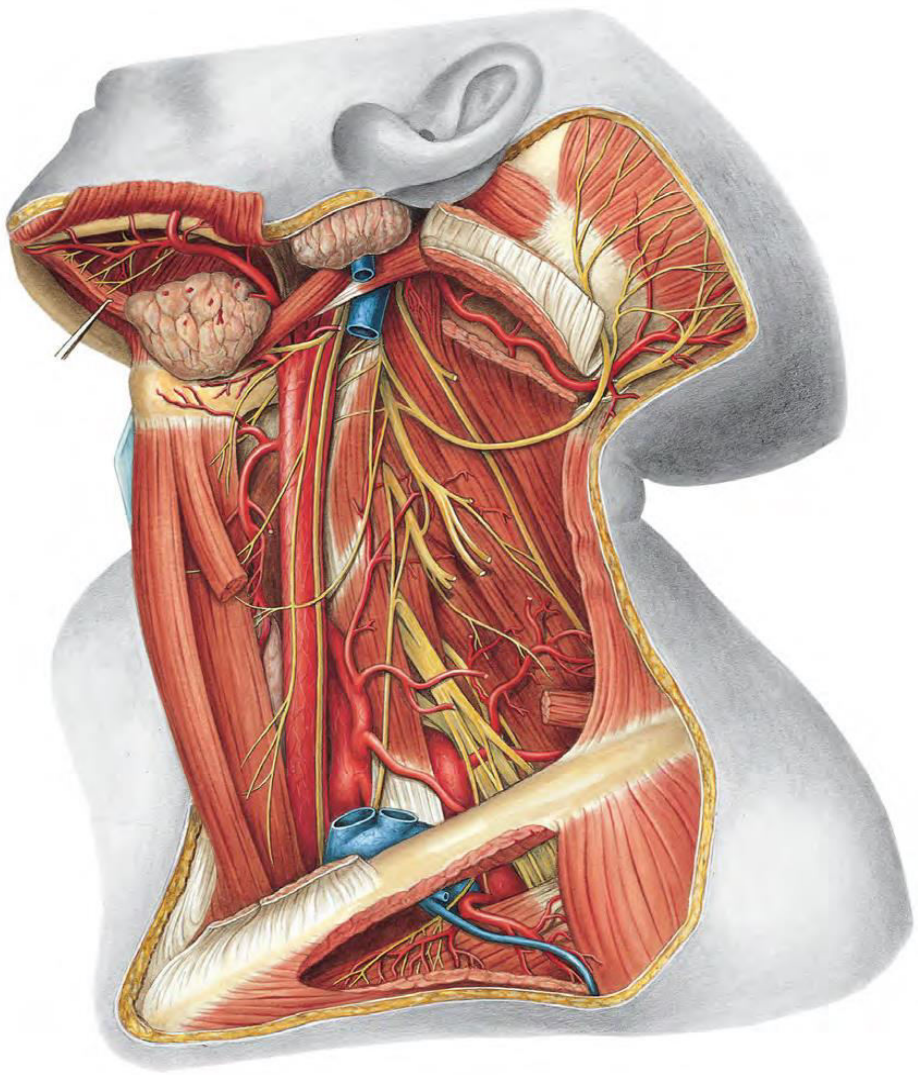
Functions :

- Controls lymphopoiesis and maintains an effective pool of circulating lymphocytes.
- Controls development of the peripheral lymphoid tissues of the body during neonatal period.

SUBMANDIBULAR SALIVARY GLAND

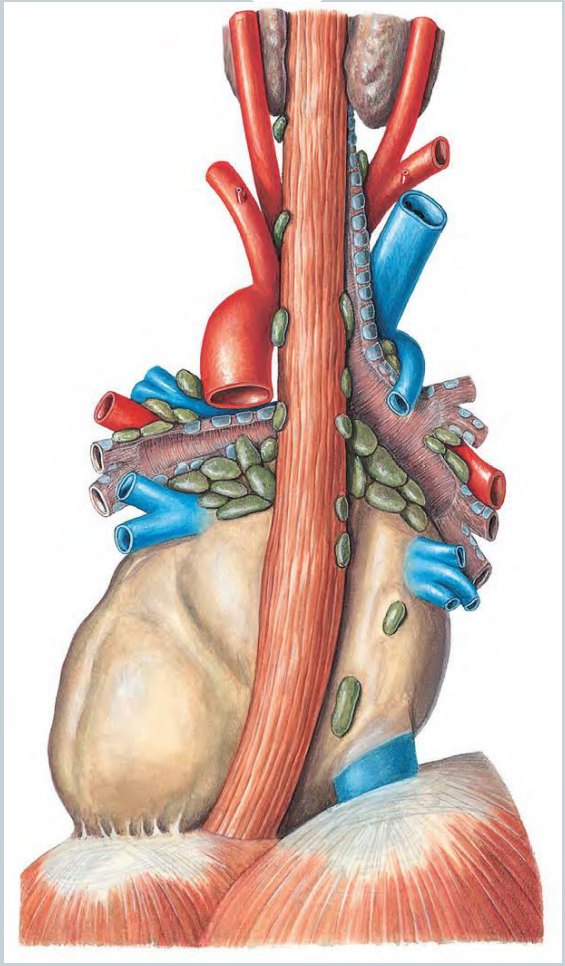
- Each submandibular salivary gland is situated

  behind and below the ramus of the mandible, in the region of the submandibular triangle, between the anterior and posterior bellies of digastric.



OESOPHAGUS – CERVICAL PORTION

- The oesophagus is a muscular tube approximately 25 cm long, connecting the pharynx to the stomach.
- It begins in the neck, level with the lower border of the cricoid cartilage and the sixth cervical vertebra.
- It descends, largely anterior to the vertebral column, into the superior mediastinum.
- The oesophagus is narrowest at its junction with the pharynx, the junction being the narrowest part of the gastrointestinal tract, except for the vermiform appendix.



Cervical part of oesophagus.

Relations :

- Anteriorly- to the trachea and to the right and left recurrent laryngeal nerves.
- Posteriorly – to the longus colli muscle and the vertebral colum
- On each side- to the corresponding lobe of the thyroid gland and on the left side, to the thoracic duct.

Blood supply :

- Is supplied by the inferior thyroid arteries.
- Veins drain into the left brachiocephalic vein.
- Its lymphatics pass to the deep cervical lymph nodes.

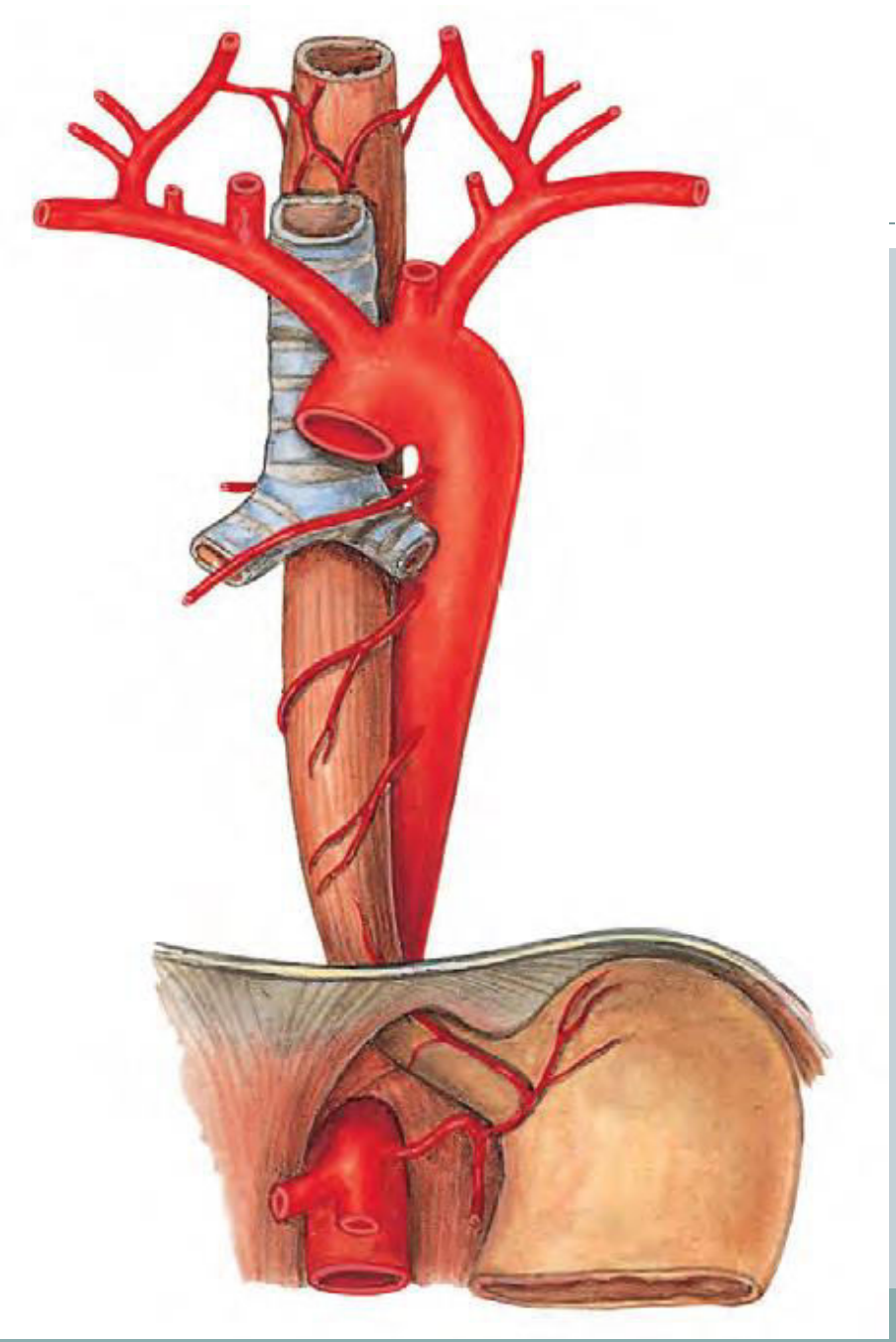
TRACHEA – CERVICAL PORTION

- The trachea is a non collapsible tube about 10–15 cm long, formed of cartilage and fibro muscular membrane.
- It descends from the larynx, and extends from the level of the sixth cervical vertebra to the upper border of the fifth thoracic vertebra.
- The trachea is flexible and can rapidly alter in length.
- It is flattened posteriorly so that in transverse section it is shaped, with some individual variation, like a letter D.
- Its external transverse diameter is 2 cm in adult males, and 1.5 cm in adult females.

TRACHEA – CERVICAL PORTION

Relations : in the neck.

- Anteriorly –a) isthmus of the thyroid gland covering the 2nd and 3rd tracheal rings. b) inferior thyroidveins below the isthmus. c) pretracheal fascia, d) sternohyiod and sternothyroid muscles, e) investing layer of the deep cervical fascia, f) the skin and superficial fascia.
- Posteriorly – a) oesophagus, b) longus colli muscle, c) recurrent laryngeal nerve in the tracheo-oesaphageal groove.
- On each side- a) the corresponding lobe of the thyroid gland, b) the common carotid artery.



TRACHEA – CERVICAL PORTION

Vessels and nerves :

- Supplied by branches from the inferior thyroid arteries.
- Veins drain into the left brachiocephalic vein.
- Lymphatics drain into the pretracheal and paratracheal nodes.
- Sympathetic nerves (from the cervical ganglion) are vasomotor.
- Parasumpathetic nerves (from the vagus through the recurrent laryngeal nerve) are sensory and secretomotor to the mucous membrane, and motor to the trachealis muscle.

THANK YOU ALL