

THYROID GLAND

Location

Located in the lower part of front of neck opp C_5 , C_6 , C_7 , and T_1 vertebrae

Coverings / Capsule

true capsule - formed by condensation of fibrous stroma of gland.

False capsule - derived from splitting of pretracheal fascia.

Q. [Why gland moves up and down?]

* Traced above,

the pretracheal fascia after encasing thyroid gland is attached to hyoid bone in middle line and oblique line of thyroid cartilage on each side.

Traced below, pretracheal fascia enters thorax and blends with fibrous pericardium.

* The false capsule is thickened to form suspensory ligament of Berry which connects medial surface of lateral lobe of gland with cricoid cartilage.

The above said attachments explain why the gland moves up and down with deglutition.

The space between true and false capsule is occupied by
(a) usually parathyroid glands along the post. borders of lateral lobes.

(b) Trunks of blood vessels, the VENOUS PLEXUS lies deep to the true capsule. So in the surgical resection, the gland is removed along with its true capsule to avoid haemorrhage.

Presenting Parts.

The glands consist of two lateral lobes & an isthmus connecting them across the middle tissue.

(a) Lateral Lobes.

Each lateral lobe present apex. —

Base
Three surfaces — Anterolateral
Medial
Postero-lateral.

Two borders — Anterior
Posterior.

Apex:

Apex is directed upward and laterally towards oblique line of thyroid cartilage AND
Apex is sandwiched between inferior constrictor medially and sternothyroid laterally.

Thus the thyroid enlargement cannot extend above the superior thyroid artery and ext. laryngeal artery and ext. laryngeal nerve, diverge from each other close to upper pole.

∴ A ligature of superior thyroid artery in thyroid surgery is applied close to the gland, to avoid supply injury to nerve.

Base:

Extends upto 5th and 6th ring of trachea and is related to inferior thyroid artery and recurrent laryngeal nerve. The nerve presents variable relation with the artery. A ligature of inferior thyroid artery in thyroid operation should be applied away from the gland to avoid injury to nerve.

Anterolateral surface:

is overlapped from within outward by sternothyroid, sternohyoid, superior belly of omohyoid, a part of sternocleidomastoid

Medial Surface:

Two tubes - Larynx + trachea

Esophagus + pharynx

Two muscles - Inferior constrictor + cricothyroid.

Two nerves - Recurrent laryngeal + Recurrent nerve.

Postero-lateral surface:

Carotid sheath and its contents

Anterior border:

Related to anterior descending branch of superior thyroid artery.

Posterior border

A longitudinal arterial anastomosis b/w superior and inferior thyroid arteries & parathyroid glands.

⑥ Isthmus

(within outward)

Anterior - sternohyoid, sternothyroid, investing layer.
Anterior jugular vein, superficial fascia, skin.

Behind - 2, 3, 4th tracheal rings.

Upper Borders:

An arterial anastomosis between two superior thyroid arteries. A pyramidal lobe extends upwards from isthmus. Some times, a fibromuscular band (water glandular thyroidea), extends from hyoid bone to isthmus as pyramidal lobe.

Lower Border:

Inferior thyroid veins and thyroidea ima artery (when present).

BLOOD SUPPLY

— Arterial Supply

① Superior thyroid artery

- Branch of ext. carotid artery - runs downwards + forwards in company with external laryngeal nerve. At apex of lateral lobe, it divides into

Anterior branch
↓
descends along ant. border of lobe.

Posterior branch.
↓
runs along the posterior border of lobe.

continues along upper
border of isthmus

↓
anastomose with its fellows
of opp side.

↓
Anastomose with ascending
branch of superior thyroid
artery.

* Supplies $\frac{1}{3}$ of lateral lobes
 $\frac{1}{2}$ of isthmus.

② Inferior thyroid artery.

Branch of thyrocervical trunk from 1st part of subclavian
artery. It runs upwards along medial border of scalenus
anterior and then passes medially behind carotid sheath
to reach back of thyroid lobe, where it is closely related
to recurrent laryngeal nrv.

the recurrent laryngeal nerve presents a variable
relationship with artery. It may pass in front or
behind or $\frac{1}{2}$ branches of artery. One ascending branch
of inf. thyroid artery anastomose with post br. of
superior thyroid artery.

* Inferior thyroid artery supplies lower $\frac{2}{3}$ of lateral
lobe and lower $\frac{1}{2}$ of isthmus.

③ Thyroidea ima artery (30% cases)

Aries from brachiocephalic trunk or from arch
of aorta → enters isthmus from below.

(c) Artery thyroid artery

from tracheal & oesophageal arteries.

— Venous supply

The veins do not accompany arteries.

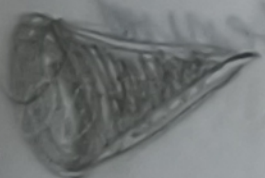
They arise from venous plexus deep to the true capsule.

* Sup. thy. vein → drains into external jugular vein

* Middle thy. vein →

* A branch of inf thyroid veins emerge from lower border of isthmus → brachiocephalic veins, left side

Sometimes 4th vein (Kocher's vein) emerges from lower pole → drains into → IJV.



LYMPHATIC DRAINAGE

Upper gp → into prelaryngeal + jugodigastric LN.

Lower gp → Pretracheal + a gp of lymph nodes along recurrent laryngeal nerve.

NERVOUS.

Parasympathetic - supply derived from vagus and derived from vagus and recurrent laryngeal nerve.

Sympathetic supply is ~~derived~~ from ~~super~~
superior, middle and inferior cervical ganglia

Clinical Applied

(1) thyroid swelling.

→ Goitre - enlargement of thyroid gland

→ Hyperplasia / Hypofunction

→ Hyperthyroidism / thyrotoxicosis

→ Causes: Graves disease, Multinodular goitre.

→ Hypothyroidism

Massive enlargements.

- Pressure effects.

Q. Upward enlargement? ~~Yes~~ No.

Q. Short neck & strong downwards into superior mediastinum

↳ Retrosternal goitre.

Q. Backward movement

↳ Yes as posterior border is ~~thin~~ hanging

this false capsule.

Results in Pressure Symptoms.

Dysnoea.

Dysphonia.

Dysphagia.

Compression of recurrent laryngeal nerve

→ Ludwig's syndrome.

(2) Thyroidectomy.

→ Surgical removal of thyroid gland.

→ Removed along with its true capsule.

→ Complications;

Ext laryngeal nerve

recurrent laryngeal nerve injury.

Inadvertent removal of parathyroid glands.

DEVELOPMENT

↳ developed from endoderm.

* From: floor of pharynx → a thickening

* grows caudally from floor of pharynx

* passes through the substance of tongue in front of body of hyoid bone.

* At upper part of trachea, duct of forms bilobed mass, gives origin to follicular cells of Thyroid gland

* Branchial body & neural crest cells are incorporated to form parafollicular cells

* Duct disappears later, cranial & persists as foramen caecum

* Caudal end may persist as pyramidal lobe

Congenital anomalies.

Incomplete descent

↳ Remains on dorsum of tongue (lingual thyroid)

↳ Ectopic sites — infrahyoid, suprahyoid, retrohyoid, intrahyoid.

Thyroglossal cyst

- cyst along persistent thyroglossal duct
- midline swelling below thyroid bone