

THYROID GLAND ANATOMY

SPECIAL FEATURES

- Only endocrine gland that is
 - Situated superficially in the body, for this reason reachable for physical examination
 - That depends on external environment for raw material, iodine, to synthesize its hormones
 - Which doesn't pour its hormones into blood immediately after formation but stores them

LOCATION

- Lies over 2, 3, and 4 tracheal rings.
- Lies against *Vertebrae C5, C6, C7 and T1*

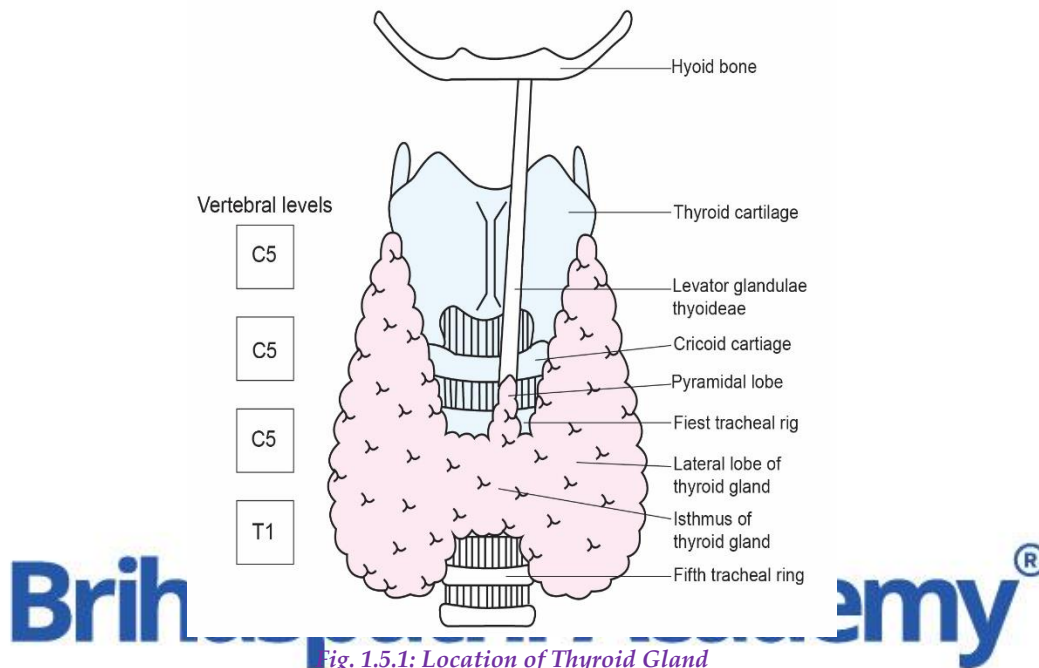


Fig. 1.5.1: Location of Thyroid Gland

PARTS

- It's Butterfly or H-shaped
- Composed of vertical left and right lateral lobes and a horizontal isthmus attaching them across the midline
- Occasionally a small pyramidal lobe projects upwards from the isthmus generally to the left of the midline
- Sometimes, it's joined to the body of the hyoid bone by a fibrous or fibromuscular band → *Levator Glandulae Thyroideae*

WEIGHTS AND DIMENSIONS

- Weighs about 25 g
- 5 cm x 2.5 cm x 2.5 cm – each lobe
- 1.2 cm x 1.2 cm – Isthmus
- Larger in females than males
- Increases in size during menstruation & Pregnancy

Thyroid Capsule

- It is invested by 2 capsules: an inner true capsule and an outer false capsule
- **True capsule:** Composed of condensation of thyroidal connective tissue
- **False capsule:** Derived from the pre-tracheal fascia (a part of the deep fascia)

RELATIONS

Thyroid Lobe

- Each lobe is Triangular and has 3 surfaces

<i>Surface</i>	<i>Related to</i>
1. Superficial	Infrahyoid muscles
2. Medial	Two tubes 1. Trachea 2. Esophagus Two nerves 1. External laryngeal 2. Recurrent laryngeal Two muscles 1. Inferior constrictor 2. Cricothyroid
3. Posterior	Overlaps - Common carotid artery - Terminal part of inferior thyroid artery

Isthmus

- Presents 2 surfaces: anterior and posterior and 2 borders: superior and inferior

<i>Surface</i>	<i>Related to</i>
Anterior	<ul style="list-style-type: none"> • Strap muscles (Sternohyoid and Sternothyroid) • Anterior jugular veins
Posterior	2 nd , 3 rd and 4 th tracheal rings

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<i>Border</i>	<i>Related to</i>
Superior	• Anastomosis between the anterior branches of two superior thyroid arteries
Inferior	• Inferior thyroid vein

ARTERIAL SUPPLY

1. *Superior Thyroid Artery*: branch of External Carotid Artery
2. *Inferior Thyroid Artery*: branch from thyrocervical trunk of 2nd part of the Subclavian artery

VENOUS DRAINAGE

1. Superior Thyroid Vein to the Internal Jugular Vein
2. Middle Thyroid Vein to the Internal Jugular Vein
3. Inferior Thyroid Vein to the Brachiocephalic Vein

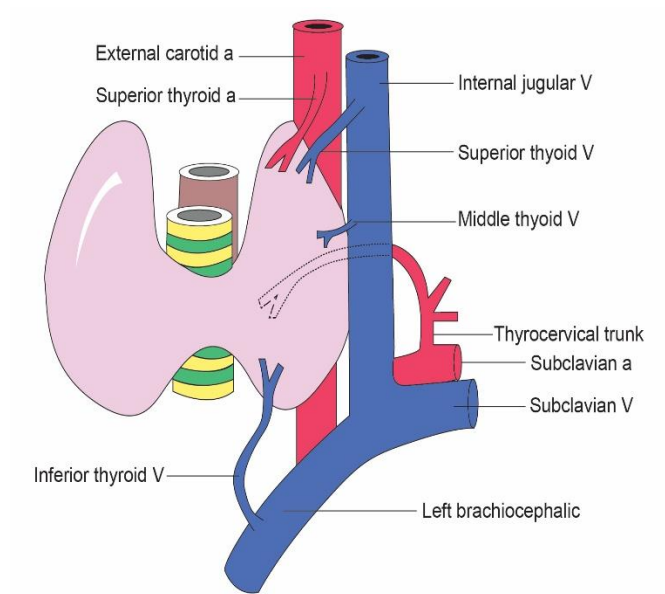


Fig. 1.52: Arterial and Venous Drainage of Thyroid Gland

NERVE SUPPLY

1. Middle Cervical Ganglion (mainly)
2. Superior and Inferior Cervical Ganglia (Partly)

LYMPHATIC DRAINAGE

<i>Upper Part</i>	To Upper Deep Cervical lymphnodes
<i>Inferior Part</i>	To Lower Deep Cervical lymphnodes
<i>Isthmus</i>	To Bachiocephalic lymphnodes

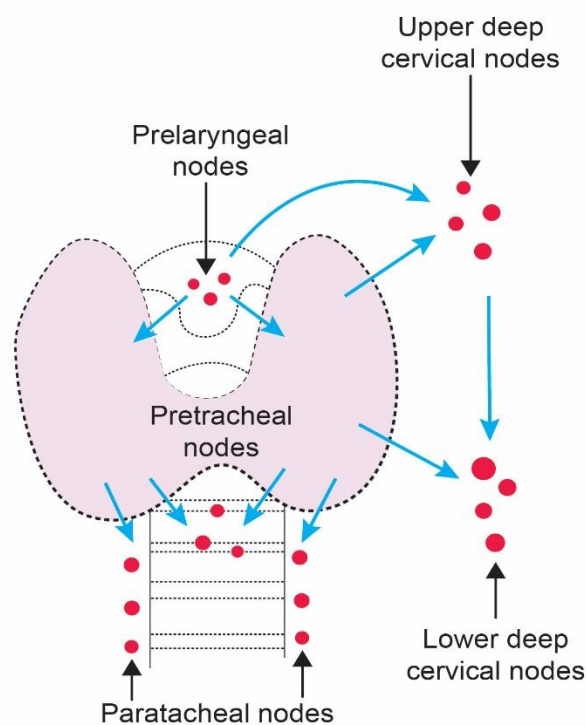
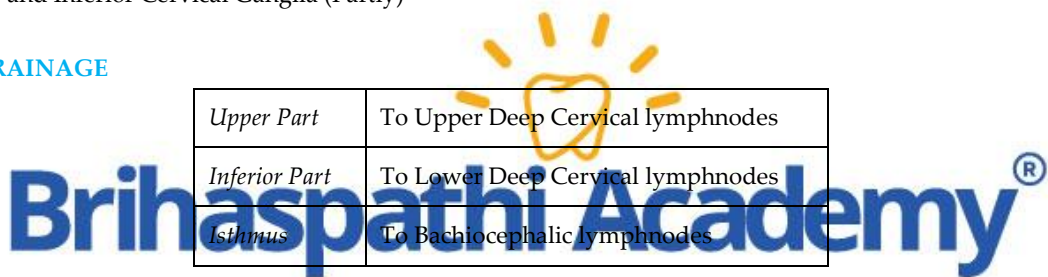


Fig. 1.5.3: Lymphatic Drainage of Thyroid Gland

HISTOLOGY

- Each lobe of thyroid gland is divided into various lobules by fibrous tissue septa
- Each lobule is made up of an aggregation of several follicles
- Each follicle is lined by follicular cells

Feature	Description
Follicles	<ul style="list-style-type: none"> • The thyroid is composed of spherical follicles that selectively absorb iodine (as iodide ions, I⁻) from the blood for production of thyroid hormones • Twenty-five percent of all the body's iodide ions are in the thyroid gland • Inside the follicles, colloid serves as a reservoir of materials for thyroid hormone production and, to a lesser extent, act as a reservoir for the hormones themselves • Colloid is rich in a protein called thyroglobulin
Thyroid epithelial cells (or "follicular cells")	<ul style="list-style-type: none"> • The follicles are surrounded by a single layer of thyroid epithelial cells, which secrete T3 and T4 • When the gland is not secreting T3/T4 (inactive), the epithelial cells range from low columnar to cuboidal cells • When active, the epithelial cells become tall columnar cells
Parafollicular cells (or "C cells")	<ul style="list-style-type: none"> • Scattered among follicular cells and in spaces between the spherical follicles is another type of thyroid cell, parafollicular cells, which secrete calcitonin.

CONGENITAL ANOMALIES

ATHYREOSIS	<ul style="list-style-type: none"> • Total absence of lateral lobes and isthmus with hypothyroidism
ECTOPIC THYROID	<ul style="list-style-type: none"> • Residual thyroid tissue along the line of descent from the tongue to mediastinum
THYROGLOSSAL CYST	<ul style="list-style-type: none"> • Swelling that can occur in any part along line of descent • Sites <ol style="list-style-type: none"> 1. Sub hyoid — commonest site 2. On the thyroid cartilage — 2nd common site 3. Beneath the foramen caecum 4. Floor of mouth 5. Suprahyoid • Clinical Features <ul style="list-style-type: none"> ▪ Midline swelling, towards the left ▪ Moves with deglutition ▪ Tugging sensation on palpation ▪ Smooth, fluctuant and non-tender • Lined by pseudostratified, ciliated columnar epithelium • Treatment: Sistrunk operation

THYROGLOSSAL FISTULA

- Not congenital
- Occurs by infection of thyroglossal cyst or after inadequate excision of the cyst
- Lined by columnar epithelium

- Causes bulge in the neck
- Characteristic feature: *Hood sign, Semilunar sign*
- Treatment: Sistrunk operation

GOITRE – CLASSIFICATION

- Goitre: Enlargement of thyroid gland

Simple Non-toxic Goitre	Toxic Goitre (Thyrotoxicosis)	Neoplastic Goitre	Thyroiditis
1. Diffuse hyperplastic 2. Colloid goitre 3. Nodular goitre (Multinodular) 4. Solitary non-toxic nodule 5. Recurrent non-toxic nodule	1. Diffuse (Primary Toxicosis)– Graves’ disease (Basedow’s Disease) 2. Multinodular (Secondary Toxicosis)–Plummer’s disease 3. Toxic nodule (Solitary) (Tertiary Toxicosis) (Goetsch’s disease) 4. Recurrent toxicosis	A. Benign B. Malignant 1. Papillary Carcinoma 2. Follicular Carcinoma 3. Medullary Carcinoma 4. Anaplastic Carcinoma	1. Hashimoto’s 2. de-Quervain’s 3. Riedel’s

SIMPLE GOITRE (NON-TOXIC)

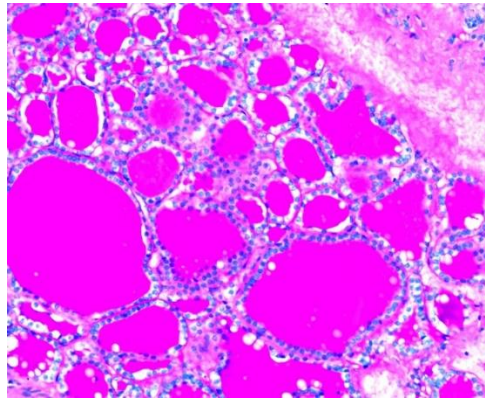
DIFFUSE HYPERPLASTIC GOITRE

- Caused by persistent increase in TSH levels
- Results in diffuse active lobules
- TSH stimulation ceases the goitre and it may regress
- Goitre is soft, diffuse and large



COLLOID GOITRE

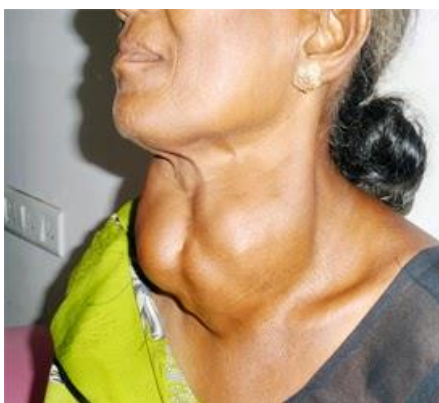
- Later stage of Diffuse Hyperplastic Goitre
- Results after falling of TSH stimulation
- Follicles are inactive and filled with colloid



MULTINODULAR GOITRE (NODULAR GOITRE)

- An end stage result of Diffuse Hyperplastic Goitre

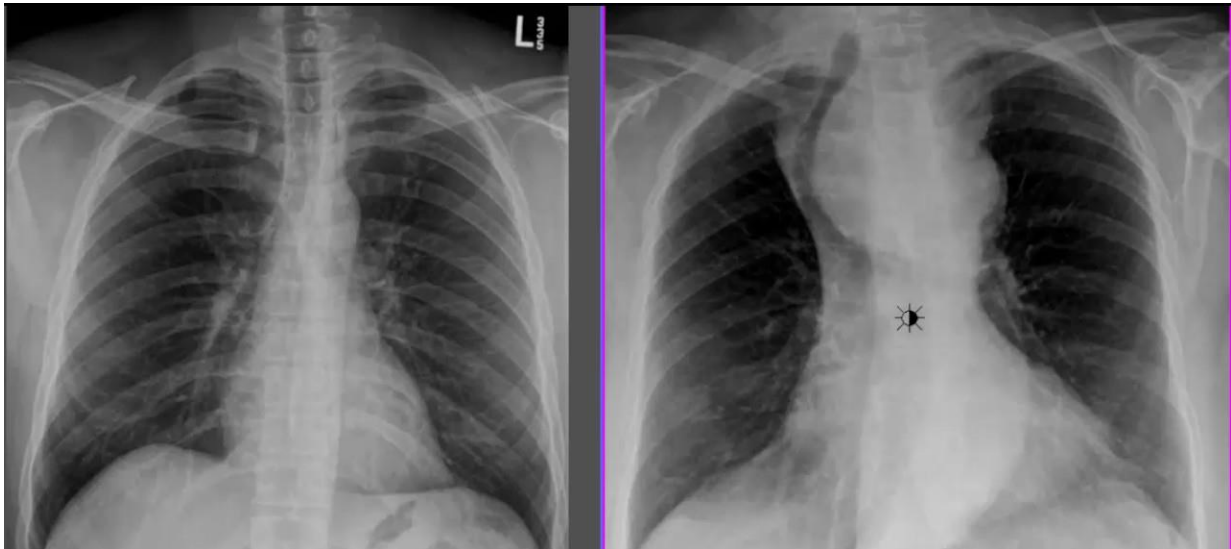
Etiopathogenesis	<ol style="list-style-type: none"> 1. Puberty goitre, pregnancy goitre 2. Iodine deficiency goitre 3. Goitrogens cause goitre by preventing oxidation of iodide to iodine
Clinical Features	<ul style="list-style-type: none"> • Common in females • Long duration of swelling in front of the neck causes <ul style="list-style-type: none"> ▪ Dyspnoea due to tracheomalacia ▪ Dysphagia • Gland is nodular, firm in consistency and both the lobes are enlarged • Hard areas - suggest calcification & soft areas - necrosis • Sudden increase in size with pain (due to haemorrhage in a nodule)
Diagnosis	<ul style="list-style-type: none"> • Straightforward • Euthyroid • Visible and palpable nodules • Smooth, firm and painless • Moves freely on swallowing
Investigations	<ul style="list-style-type: none"> • Thyroid function tests to exclude mild hyperthyroidism • Presence of circulating thyroid antibodies to differentiate from autoimmune thyroiditis • Ultrasound is the gold standard assessment • FNAC is done from suspicious nodules after Ultrasound assessment
Treatment	<ul style="list-style-type: none"> • Total or near total thyroidectomy • Subtotal thyroidectomy



Retrosternal Goitre

- Very often, it is a multinodular goitre which develops in the neck and is slowly pulled down behind the sternum due to following reasons
 1. Negative intrathoracic pressure
 2. Pre-tracheal muscles are strong in men
 3. Short neck, obesity
- Rarely, it arises from an ectopic thyroid tissue

Clinical Types	<ol style="list-style-type: none"> 1. Substernal – Most common type 2. Intrathoracic 3. Plunging goitre
Clinical Features	<ul style="list-style-type: none"> • It can be suspected when lower border of the swelling is not seen • Most of the patient have difficulty in breathing (dyspnoea) or even stridor • Dysphagia is more common • <i>Pemberton’s sign</i> - Engorgement of neck veins and superficial veins. These become more prominent when the hands are raised above the head and the arms touch the ears
Treatment	<ul style="list-style-type: none"> • It can be easily explored through the neck incision and removed • Very, very, rarely, sternal split may be necessary



TOXIC GOITRE (THYROTOXICOSIS)

- A complex disorder that occurs due to the increased levels of thyroid hormones
- Manifests clinically with a variety of signs and symptoms

DIFFUSE TOXIC GOITRE/PRIMARY THYROTOXICOSIS/GRAVES’ DISEASE/BASEDOW’S DISEASE

- Autoimmune disease
- Occurs due to increased levels TSH receptor antibodies
- Familial
- Pathological changes are due to Thyroid stimulating immunoglobulins (TSI)/thyroid stimulating antibodies (Ts Ab) and long acting thyroid stimulators (LATS)
- More in Females
- Symptoms, Signs and Swelling appear simultaneously

Symptoms	<ul style="list-style-type: none"> • Young women • Unexpected weight loss despite good appetite • Heat intolerance • Cold preference • Tremors • Excitability • Hyperkinetic movements • Excessive sweating 																						
Signs	Thyroid Gland	<ul style="list-style-type: none"> • Mild uniform enlargement • Smooth surface without nodules • Soft or firm in consistency • Warm • Bruit on auscultation 																					
	CNS	<ul style="list-style-type: none"> • Tremors of tongue • Tremors of outstretched hands • Hyperkinetic movements • Moist, warm hand 																					
	CVS	<ul style="list-style-type: none"> • Tachycardia • Crile's grading (based on pulse rate) <ul style="list-style-type: none"> ▪ Grade I: < 90/minute ▪ Grade II: 90-110/minute ▪ Grade III: >110/minute • Palpitations • Extra systoles 																					
	Eye	<ul style="list-style-type: none"> • Thyrotoxic Exophthalmos – prominent eyeballs, retraction of the eye lid 																					
		<p>Assessment of Exophthalmos by various signs</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:50%; text-align: center;"><i>Sign</i></th> <th style="width:50%; text-align: center;"><i>Feature</i></th> </tr> </thead> <tbody> <tr> <td data-bbox="480 1267 820 1323">Dalrymple's sign</td> <td data-bbox="820 1267 1469 1323"> <ul style="list-style-type: none"> • Upper sclera is seen above the limbus </td> </tr> <tr> <td data-bbox="480 1323 820 1473">Naffziger's sign</td> <td data-bbox="820 1323 1469 1473"> <ul style="list-style-type: none"> • Patient should be in sitting posture with the fully extended neck • Protruded eyeball can be seen from the behind on backward tilting of patient head </td> </tr> <tr> <td data-bbox="480 1473 820 1529">Moebius sign</td> <td data-bbox="820 1473 1469 1529"> <ul style="list-style-type: none"> • Loss of convergence of eyeball due to muscle paresis </td> </tr> <tr> <td data-bbox="480 1529 820 1680">Stellwag's sign</td> <td data-bbox="820 1529 1469 1680"> <ul style="list-style-type: none"> • First sign to appear • Infrequent blinking and widened palpebral fissure • Occurs due to spasm of levator palpebrae superioris muscle </td> </tr> <tr> <td data-bbox="480 1680 820 1736">Joffroy's sign</td> <td data-bbox="820 1680 1469 1736">Absence of wrinkling when patient frowns (looking up)</td> </tr> <tr> <td data-bbox="480 1736 820 1821">von Graefe's sign (Lid Lag's sign)</td> <td data-bbox="820 1736 1469 1821">Inability of the upper eyelid to keep pace with the eyeball when it looks downwards to follow the examiners finger</td> </tr> <tr> <td data-bbox="480 1821 820 1877">Enroth sign</td> <td data-bbox="820 1821 1469 1877">Oedema of eyelids and conjunctiva</td> </tr> <tr> <td data-bbox="480 1877 820 1933">Gifford's sign</td> <td data-bbox="820 1877 1469 1933">Difficulty in everting upper eyelid</td> </tr> <tr> <td data-bbox="480 1933 820 1973">Kocher's sign</td> <td data-bbox="820 1933 1469 1973">When an attempt is made to lift the eyes higher, patient's upper lid springs up more quickly than eyebrows</td> </tr> </tbody> </table>		<i>Sign</i>	<i>Feature</i>	Dalrymple's sign	<ul style="list-style-type: none"> • Upper sclera is seen above the limbus 	Naffziger's sign	<ul style="list-style-type: none"> • Patient should be in sitting posture with the fully extended neck • Protruded eyeball can be seen from the behind on backward tilting of patient head 	Moebius sign	<ul style="list-style-type: none"> • Loss of convergence of eyeball due to muscle paresis 	Stellwag's sign	<ul style="list-style-type: none"> • First sign to appear • Infrequent blinking and widened palpebral fissure • Occurs due to spasm of levator palpebrae superioris muscle 	Joffroy's sign	Absence of wrinkling when patient frowns (looking up)	von Graefe's sign (Lid Lag's sign)	Inability of the upper eyelid to keep pace with the eyeball when it looks downwards to follow the examiners finger	Enroth sign	Oedema of eyelids and conjunctiva	Gifford's sign	Difficulty in everting upper eyelid	Kocher's sign	When an attempt is made to lift the eyes higher, patient's upper lid springs up more quickly than eyebrows
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		<i>Order of appearance of signs (Descending)</i> <ol style="list-style-type: none"> 1. Stellwag's sign 2. von Graefe's sign 3. Joffroy's sign 4. Moebius sign
Extra Thyroidal Manifestations	<ul style="list-style-type: none"> • Pretibial myxoedema • Proximal myopathy • Pachy (acropachy) • Progressive ophthalmoplegia 	
Investigations	<ul style="list-style-type: none"> • Increased T3 and T4 • Low TSH • Continued high sleeping pulse rate • Increased TSH-RABs 	
Treatment	<ul style="list-style-type: none"> • Continuation of antithyroid drugs • Surgery – Subtotal thyroidectomy • Radioiodine 150 microcuries per gram 	

Parameter	Primary Thyrotoxicosis	Secondary Thyrotoxicosis
Age	15-25 years	25 - 40 years
Symptoms and signs	Appears simultaneously; duration is short	Swelling - Long duration Signs - Short duration
Skin over the swelling	Warm	Not warm
Consistency	Soft or firm	Firm or hard
Surface	Smooth	Nodular
Auscultation	Bruit is common	Bruit uncommon
Eye signs	Commonly found	Rarely found
Predominant symptoms	CNS	CVS
Pretibial myxoedema	May be found	Never found
Proximal myopathy	May be found	Never found
Malignant exophthalmos	May be found	Never found

SOLITARY THYROID NODULE

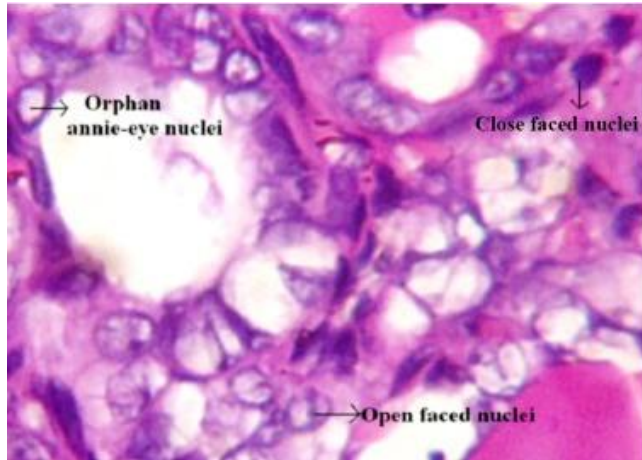
- Clinical term for single palpable nodule
- Most common surgical disease of the thyroid gland
- More in Females
- Males have more high malignancy rates



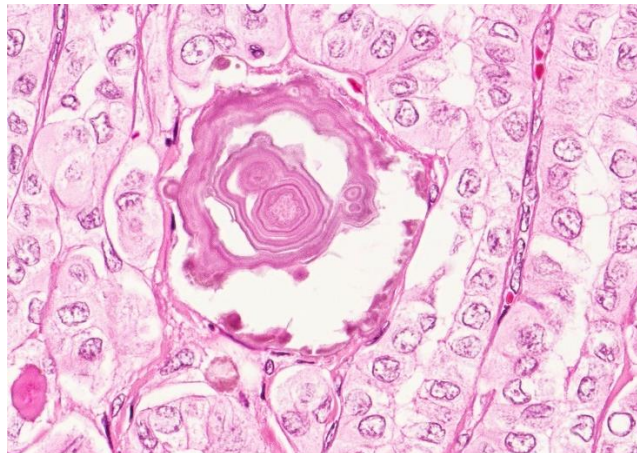

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NEOPLASTIC GOITRE

Parameter	Papillary	Follicular	Anaplastic	Medullary
<i>Aetiology</i>	<ul style="list-style-type: none"> Irradiation Complication of Hashimoto's thyroiditis Often in Cowden's syndrome, Gardner's syndrome, Carney's syndrome 	Endemic goitre	Unknown	Sporadic or familial
<i>Incidence</i>	60%	17%	13%	6%
<i>Age (years)</i>	20-40	30-50	50 and above	Middle age
<i>Diagnosis</i>	Thyroid swelling with lymph nodes	Thyroid swelling, Flat bone metastasis	Thyroid swelling, Local fixity, Stridor <i>Berry sign positive</i> : CCA pulsation is not palpable	Difficult to diagnose clinically
<i>Microscopy</i>	<p><i>Orphan Annie Eye Nuclei</i> (nuclei with uniform staining, which appear empty due to powdery chromatin and marginal micronucleoli)</p> <p><i>Psammoma bodies</i> (concentric layers of calcium deposits)</p>	Angioinvasion capsular invasion	Poorly differentiated cells	Amyloid stroma like carcinoid
<i>Spread</i>	Lymphatic	Blood	Local infiltration	Lymphatic, blood
<i>Investigation</i>	FNAC	Frozen section	FNAC, biopsy	FNAC, calcification
<i>Treatment of the Primary</i>	Near-total thyroidectomy	Near-total thyroidectomy	Isthmusectomy, external Radiotherapy	Total thyroidectomy
<i>Treatment of Metastasis</i>	Functional block dissection	Radio-iodine I ₁₃₁ or external RT	Palliative external radiotherapy	Radical block dissection
<i>TSH dependence</i>	Yes	Yes	No	No
<i>Hormone production</i>	Very rare	Very rare	No	Calcitonin, 5HT, ACTH
<i>Prognosis</i>	Excellent	Good	Worst	Bad



Orphan Annie Eye Nuclei



Psammoma bodies



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HURTHLE CELL CARCINOMA

- More aggressive form of Follicular carcinoma
- Has 75% malignant cells
- Lymphatic spread
- Distant metastasis
- High mortality

THYROIDITIS

Parameter	Granulomatous	Hashimoto's	Riedel's
<i>Aetiology</i>	Virus	Autoimmune	Collagen disorder
<i>Age group</i>	Young	Menopause Woman	Old age
<i>Pathology</i>	Inflammatory cells	Lymphocytes, fibrosis	Extensive fibrous tissue
<i>Clinical</i>	Painful, tender, smooth, sudden goitre	Irregular or nodular, firm, nontender	Hard, irregular, fixed, nontender
<i>Toxicity</i>	Initial toxicity, later normal	Initial toxicity, later hypothyroidism	Hypothyroidism
<i>Laboratory tests</i>	ESR is increased	Anti-thyroid antibodies	No biochemical test
<i>Treatment</i>	Symptomatic	Thyroxine, Surgery	Thyroxine, Surgery
<i>Differential Diagnosis</i>	Acute bacterial thyroiditis	Multinodular goitre	Anaplastic carcinoma

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COMPLICATIONS OF THYROIDECTOMY

1. Haemorrhage
2. Respiratory obstruction – due to tension haematoma
3. Laryngeal nerve paralysis
 - A. Unilateral
 - Whispering voice
 - Airway obstruction
 - B. Bilateral
 - Dyspnoea
 - Strider
 - Normal voice
4. Permanent hypothyroidism
5. Permanent hypoparathyroidism
6. Thyrotoxic storm
 - Occurs in patients with primary thyrotoxicosis who are improperly treated / prepared for surgery
 - Prevention:
 - Euthyroid before surgery
 - Beta blockers, Carbimazole
 - Lugol's iodine
 - Good anaesthesia
 - Perfect haemostasis
 - Gentle manipulation

7. Wound infection
8. Scar hypertrophy and keloid
9. Stitch granuloma

Dunhill's procedure

- Done as one of the treatment of Multinodular goitre
- Total lobectomy on one side + subtotal on other side
- Preserves some thyroid tissue

THYROID FUNCTION TESTS

Parameter	T3	T4	TSH
Normal Value	1.5 – 3.5 nmol/L	55 – 150 nmol/L	0.3 – 5 IU/ml
Thyrotoxicosis	↑	↑	Suppressed
T3 toxicosis	↑↑	Normal	Suppressed
Hypothyroidism	↓/Normal	↓	↑

MISCELLANEOUS

SWELLINGS THAT MOVE WITH DEGLUTITION

1. Thyroid swellings
2. Subhyoid bursitis
3. Pretracheal and Prelaryngeal lymphnodes
4. Thyroglossal cyst
5. Laryngocele



ISOTOPE SCAN

- ^{99m}Tc – Most commonly used isotope

Type of Nodule	Feature	Example
Hot nodule	Gland does not takes up the isotope Nodule takes up	Solitary Toxic nodule Toxic Adenoma
Warm nodule	Entire gland takes up the isotope	Grave's disease
Cold nodule	Nodule does not takes up the isotope Only 10% od the cold nodules are malignant	Malignancy

THYROID GLAND ANATOMY

1. Thyroid gland develops from

- A. Laryngo-tracheal diverticulum
- B. Rathke's pouch
- C. Buccinator muscle
- D. Orbicularis oris muscle

Ans: A. Laryngo-tracheal diverticulum
 Ref: I.B. Singh, 8/E, p. 112

2. Thyroid

- A. Is attached to larynx with a duct
- B. Is bloodless endocrine gland
- C. Extends from 3rd tracheal to 5th tracheal ring
- D. Moves with larynx in speaking

Ans: D. Moves with larynx in speaking
 Ref: Gray's Anatomy 39/e, p. 560-64

3. How may lobes be present in thyroid gland

- A. Two
- B. Three
- C. Four
- D. Six

Ans: A. Two
 Ref: Gray's Anatomy 39/e, p. 560

4. The structure between two lobes of thyroid gland may be

- A. Pyramidal lobe
- B. Remnant of thyroglossal duct
- C. Muscular slip
- D. Any of the above

Ans: D. Any of the above
 Ref: Gray's Anatomy 39/e, p. 561

5. Isthmus of thyroid lies against

- A. 1st ring of trachea
- B. 2nd ring of trachea
- C. 2nd, 3rd ring of trachea
- D. 4th, 5th ring of trachea

Ans: C. 2nd, 3rd ring of trachea
 Ref: Gray's Anatomy 39/e, p. 561

6. The thyroid gland lies against which of the following vertebrates

- A. C1, C2, and C3
- B. C3, C9, and C5
- C. C5, C6, C7 and C8
- D. C5, C6, C7 and T1

Ans: D. C5, C6, C7 and T1
 Ref: Gray's Anatomy 39/e, p. 561

7. Fascial sheath for thyroid gland is provided by

- A. Investing layer of deep cervical fascia
- B. Prevertebral fascia
- C. Pretracheal fascia
- D. Carotid sheath

Ans: C. Pretracheal fascia
 Ref: BD Chaurasia, 5/E, p. 172

8. Thyroid gland is invested by

- A. Investing layer of deep cervical fascia
- B. Pretracheal layer of deep cervical fascia
- C. Prevertebral layer of deep cervical fascia
- D. Carotid sheath.

Ans: B. Pretracheal layer of deep cervical fascia
 Ref: Gray's Anatomy 39/e, p. 560

9. Which of the following is/are functions(s) of thyroid glands?

- A. Regulate basal metabolic rate
- B. Stimulate somatic growth
- C. Regulate calcium metabolism
- D. All of the above

Ans: D. All of the above
 Ref: Essentials of Human Anatomy, A.K Datta vol 2, 3/e, p. 161-166

10. The thyroid gland is supplied by

- A. Superior thyroid artery
- B. Inferior thyroid artery
- C. Both superior and inferior thyroid arteries
- D. None of the above

Ans: C. Both superior and inferior thyroid arteries
 Ref: Gray's Anatomy 39/e, p. 563

11. Middle thyroid vein drains into vein

- A. External jugular
- B. Anterior jugular
- C. Internal jugular
- D. Brachiocephalic

Ans: C. Internal Jugular vein

12. The internal thoracic veins are tributaries of the

- A. Azygos
- B. Subclavian
- C. Internal jugular
- D. Brachiocephalic

Ans: D. Brachiocephalic

Ref: Gray's 39/e p- 1026

13. The nerve supply of thyroid gland is derived from

- A. Superior cervical ganglion
- B. Middle cervical ganglion
- C. Inferior cervical ganglion
- D. All of the above

Ans: D. All of the above

Ref: Gray's Anatomy 39/e, p. 503

14. Following nerve pierces the thyrohyoid membrane

- A. Recurrent laryngeal nerve
- B. Superior laryngeal nerve
- C. External laryngeal nerve
- D. Internal laryngeal nerve

Ans: D. Internal laryngeal nerve

Ref: Gray's Anatomy 39/ e, p. 636

15. The recurrent laryngeal nerve has a variable course in the neck. Which of the following statements is true about it

- A. The recurrent laryngeal nerve passes between the branches of the inferior thyroid vessels
- B. The recurrent laryngeal nerve passes anterior to the branches of the inferior thyroid vessels
- C. The recurrent laryngeal nerve passes posterior to the branches of the inferior thyroid vessels
- D. The recurrent laryngeal nerve passes through the sternomastoid muscle
- E. The recurrent laryngeal nerve has no relation to inferior thyroid vessels.

Ans: A. The recurrent laryngeal nerve passes between the branches of inferior thyroid vessels.

B. The recurrent laryngeal nerve passes anterior to the branches of inferior thyroid vessels

C. The recurrent laryngeal nerve passes posterior to the branches of the inferior thyroid vessels

Ref: Gray's 39/e P-644, 557-58, 987-88, 1044;

16. Which of the following capsule of thyroid gland is a peripheral condensation of the connective tissue of gland

- A. True capsule
- B. False capsule
- C. Both of the above
- D. None of the above

Ans: A. True capsule

Ref: A.K Datta vol 2, 3/e

17. False capsule of thyroid is derived from

- A. Investing layer of deep fascia
- B. Pretracheal layer of deep fascia
- C. Paratracheal layer of deep fascia
- D. None of the above

Ans: B. Pretracheal layer of deep fascia

Ref: Pretracheal layer of deep fascia

18. The suspensory ligament (of berry) of the thyroid gland is a derivative of

- A. Pretracheal fascia
- B. Prevertebral fascia
- C. Condensation of the stroma of the gland
- D. Thyrohyoid membrane

Ans: A. Pretracheal fascia

Ref: Lee Mc Gregor's Synopsis of Surgical Anatomy, 12/e, p. 201

19. The suspensory ligament of Berry is related to which of the following glands

- A. Parotid glands
- B. Sublingual gland
- C. Thyroid gland
- D. Parathyroid gland

Ans: C. Thyroid gland

Ref: A.K Datta vol 2, 3/E, P. 160-60

20. Which of the following is/are true about thyroid glands?

- A. It is an endocrine gland
- B. It regulates the basal metabolic rate
- C. It plays an important role in calcium metabolism
- D. All of the above

Ans: D. All of the above

Ref: A.K Datta vol 2, p. 160-60

21. Thyroid gland increases in size during?

- A. Menstruation
- B. Pregnancy
- C. Both of the above
- D. None of the above

Ans: C. Both of the above

Ref: Gray's Anatomy 39/e, p. 560

22. Select the incorrect statement regarding thyroidectomy

- A. The gland is removed leaving behind the false capsule
- B. The inferior thyroid artery is ligated close to the thyroid gland
- C. In partial removal, posterior portion of the gland is retained
- D. The parathyroid gland can be located by tracing the branches of the inferior thyroid artery to that gland

Ans: B. The inferior thyroid artery is ligated close to the thyroid gland

Ref: Lee Mc Gregor's Synopsis of Surgical Anatomy, 12/e, p. 202-203

23. Cricothyroidotomy is contraindicated in

- A. Age below 5 years
- B. Age between 15-20 years
- C. Age between 20-30 years
- D. Age between 30-40

Ans: A. Age below 5 years

