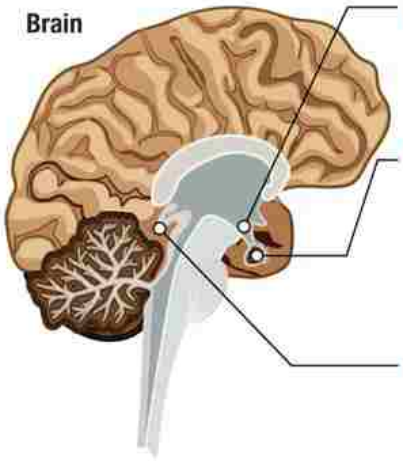
Human Body: Endocrine System

The endocrine system contains 9 major glands and organs that produce, store, and secrete hormones.



1 Hypothalamus

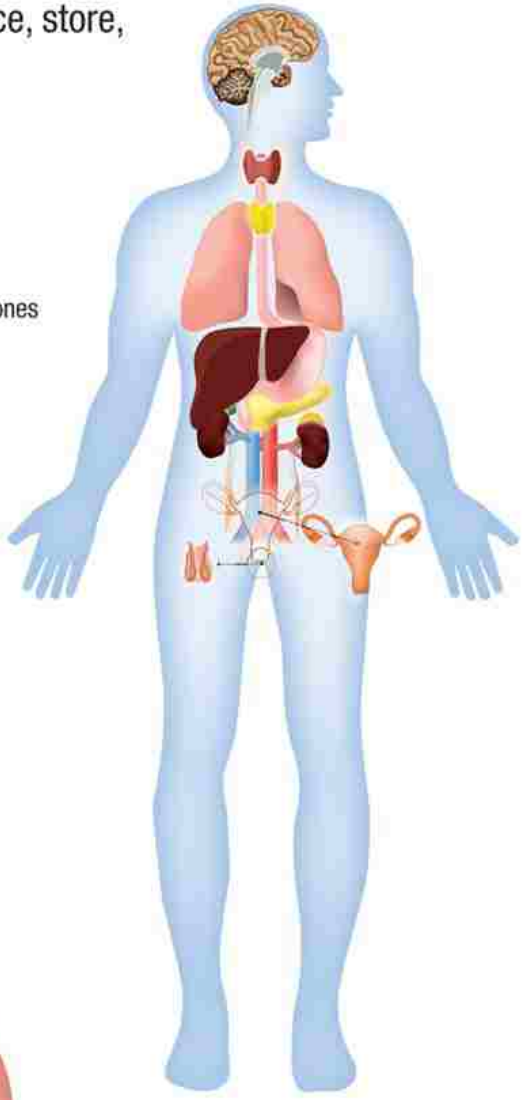
Maintains the body's homeostasis and regulates body temperature, heart rate, and blood pressure.

2 Pituitary Gland

Composed of 2 lobes: the anterior, which secretes hormones involved in the body's growth and development, and the posterior, which secretes hormones that increase the reabsorption of water into the kidneys.

3 Pineal Gland

Responsible for the production of melatonin, which plays a major role in the body's sleep-wake cycle.



4 Thyroid

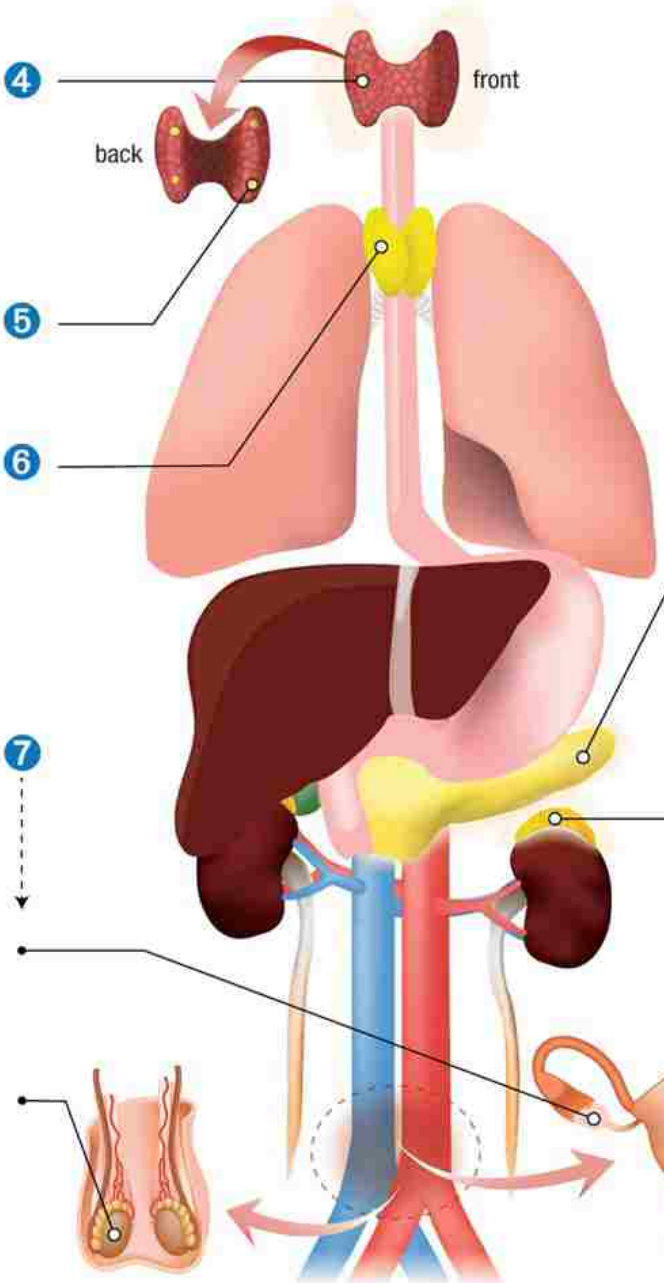
This butterfly-shaped gland produces 3 major hormones: calcitonin, triiodothyronine (T3), and thyroxine (T4). They help regulate the body's energy and metabolism.

5 Parathyroid

The parathyroid secretes hormones necessary for calcium absorption.

6 Thymus

The thymus controls production of T-cells (white blood cells) and plays a vital role in the body's ability to fight diseases.



7 Ovaries/Testes

The male and female reproductive organs release hormones responsible for blood circulation, mental vigor, and sex drive.

Ovary

Secretes estrogen and progesterone, which play a key role in the health of the female reproductive system.

Testis

Secretes testosterone, which is vital for physical development, bone density, and libido in males.

8 Pancreas

Aids in the digestion of proteins, fats, and carbohydrates. Responsible for the production of insulin and glucagon, which regulate the level of glucose in the blood.

9 Adrenal Gland

Produces hormones that allow the body to react to stress, such as adrenaline and cortisol.

Endocrinology

- This system is made up of isolated or clustered cells and Ductless glands. (ગુચ્છા માં કોશો)

- The Secrete Hormones that Regulate Body Metabolism, tissue function, growth & Development, sexual function, Reproduction sleep, mood etc

Classification

1) Base on Location

- Cranial endocrine gland → (Head)
  - Pituitary
  - Pineal
- Cervical endocrine gland → (Neck)
  - thyroid
  - Parathyroid
- Abdominal endocrine gland. → (abdomin)
  - Pancreas
  - adrenal
  - testis
  - ovary

2) Base on Number

- uni-lateral (Single)
  - Pituitary
  - pineal
  - pancreas
- Bilateral (Paired)
  - adrenal
  - Parathyroid
  - thyroid etc

3) Base on Secretion

- Telecrine → Hormones are transport By Blood.
  - Thyroid, adrenal, Pituitary
- Paracrine → Hormone are transport without Blood.
  - Interstitial fluid from secretory cell. (α cells)
  - ex. somatostatine
- Autocrine → Bind to autocrine Receptor ex. cytokine interleukin in monocytes
- Neuroendocrine → neuronal Impulse ex. Hypothalamic - pituitary - adrenal axis

4) Base on embryological origin

Ectodermal	Mesodermal	Endodermal
- Pituitary	- adrenal cortex	- thyroid
- pineal	- testis	- Parathyroid
	- ovary	- Pancreas

all endocrine gland —is→ Ductless gland

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1) Pituitary gland –

[पियुषिका ग्रंथी]

→ also called Hypophysis cerebri–
→ Small endocrine gland situated at the Base of Brain.

→ Known as Master endocrine gland Bcz, they Produce & control the secretion of other gland.

- Location :- Hypophyseal fossa or
  ☆ sella tercica of sphenoid bone
  :- They have Roof of Diaphragmasellae.

- Shape :- oval
- weight :- 500 mg
- Diameter :- Transverse → 12 mm
  ant - Posteriorly → 8 mm

- Relation :-

Superiorly → - optic Chiasm
- Infundibular Recess of 3rd
- ventrical

Inferiorly → Sphenoidal Sinus, Hypopyseal fossa.

each side → cavernosus sinus.

→ Sub division

1) adenoHYPOPhysis] Diff. from each other
2) NeuroHYPOPhysis] to - embryologically,
- MorPhologically,
- Functionally

1) AdenoHYPOPhysis —
- DeVlop as an upward growth
- consist 3 lobs:
1) Pars distalis (ant. lobe) - largest part
2) Pars Intermedia - From By thin strip
3) Pars Tuberalis
↓
- upward extension of the ant. lobe
- Surrounds & form Infundibulum.
↓
- Separated ant. lobe

2) NeuroHYPOPhysis —
- DeVlop as Downward growth
- they connected the HYPOthalamus & Neural Pathway.
- consist 3 parts
1) Pars Nervosa (Post. lobe)
2) Infundibulum (Pituitary Stalk) - neural connectin In Bld Post. lobe & HYPOthalamus.
3) Midian eminence - continuation of Infundibulum

Histology 1) Cell of Ant. Part - on Basis Routine staining Process
- Acidophillic → Somatotrophs - Produce - GH / STH.
→ lactotrophs - Produce - Prolactine

→ Pars Intermedia → existence during foetal Development
→ In adult - not exist.

→ Blood Supply :- Sup. & Inf. Hypophyseal artery → Internal Carotid A.

→ Venous drainage :- Short vein → present on surface of gland → Drain into Venus sinus.

→ Nerve Supply :- carotid Plexus of Sym. System

→ Lymphatic drainage :- ⊛ endocrine gland not lymphatic drainage

→ Hormones Produced → Vasopressin and oxytocin.

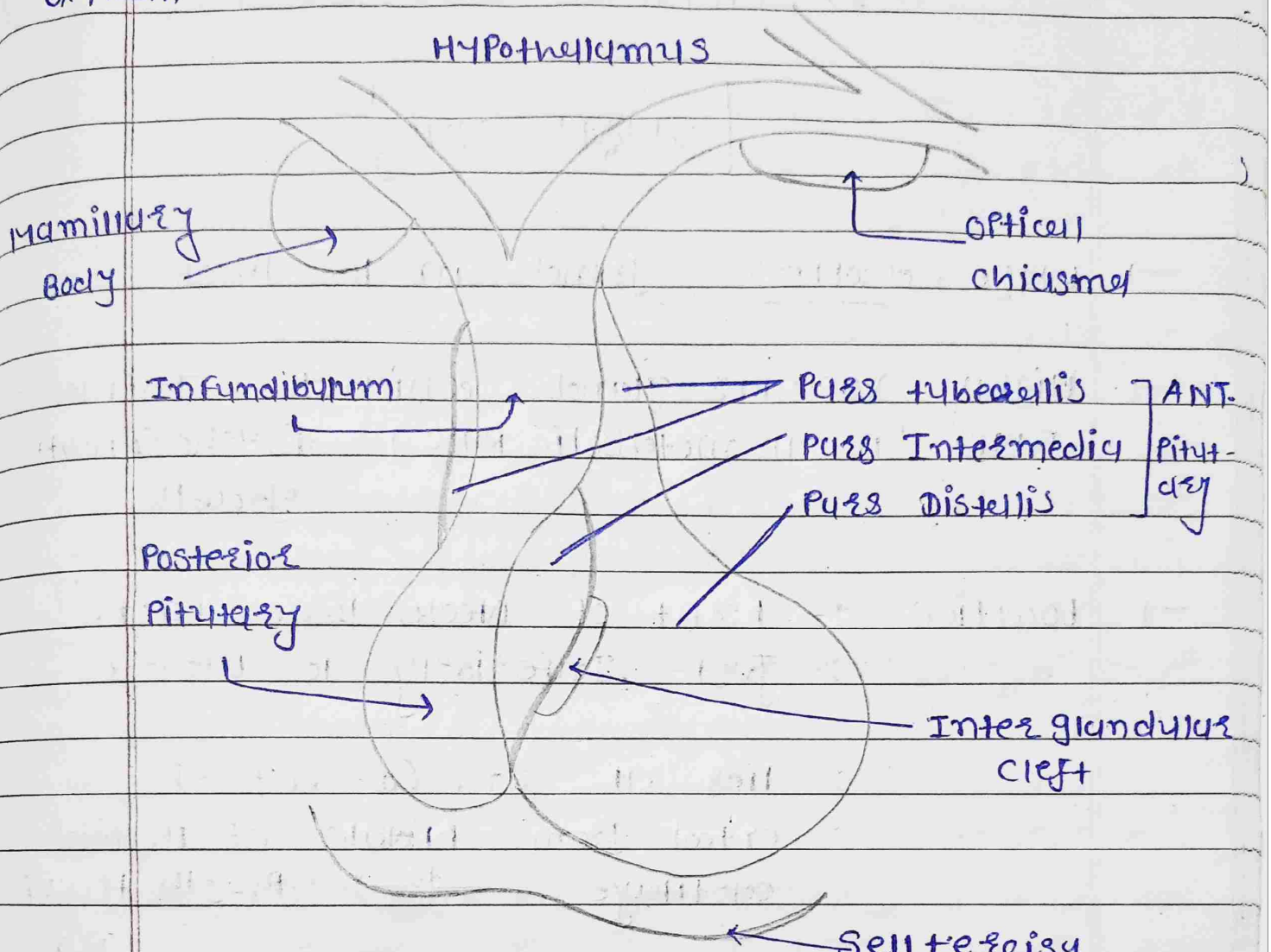
→ Histology ⊗

1) cell of ant. Part → on basic Routin staining process
2) acidophilic cell →

• Basophilic cell → TSH, FSH, LH

② cell of Post. Part
- Specialized cell called – Pituicytes
ADH / Vasopression
oxytosin

⑤ cell of Pars intermedia
MSH



→ clinical anatomy

1) giguntism → excess GH (Child)
2) acromegaly → excess GH (adult)
3) Dwarfism → deficiency GH
4) Diabetes Insipidus
5) Renal calculi

2> Thyroid gland —

[अवटुका ग्रंथी]

→ large, ductless gland in the Neck.

→ Highly vascular gland which the Influence BMR (Basal metabolic Rate), Psycho Somati growth.

→ Location :- Front of Neck lower Part.
:- Just Inferiorly to Larynx.
:- lies at C_5, C_6, C_7, T_1
:- extend from Middle of thyroid cartilage → to 4th-5th tracheal Ring

→ Shape :- Conical (Butterfly gland)
→ weight :- 25 gm
→ Measurement :- 5 x 2.5 x 2.5 cm (each lobes)
:- Thickness → 1-2 cm
→ Appearance :- Soft

Lobe → Lobule → follicle → Parafollicular cell
→ follicular cell.

Histology ① follicular cell - They influence M.R.
- 2 Hormons secreat - T3, T4
② Para follicular cell - secrete - thyrocalcitonin
↳ ca+2 les. in Body.

→ External Feature
- 2 lobes
- Both lobes are connected to Isthmus.

→ Some time Fibro Muscular Band of. levator glandlae thyroide extend from isthmus to Hyoid Bone

- apex - upward
- Base - lies at 4th & 5th Trachial Ring.
- Surface (3) → lateral
→ Medial
→ Postero-lateral.
- Border (2) → Anterior
→ Posterior

→ Relation
- anterior → Sterno thyroid
- Sterno Hyoid
- Sterno cleido mastoid Muscle
- Postero Medial → Trachea
- oesophagus
- larynx
- Posterior → carotid Sheath
lateral. - Common carotid artery.
- Vagus Nerve

• Hormon Secretion → TRH
TSH
T4 , T3

• Posterior → Pair of Parathyroid gland.

→ capsule

• True capsule → formed By Peripheral connective tissue

• False capsule → derived By deep cervical fascia
→ forms suspensory ligament
they connect lobe with cricoid cartilage

→ artery supply → Sup. thyroid A. → ext. carotid A.
→ Inf. thyroid A. → Subclavian A.

→ Venous Drainage →

Sup. thyroid Vein → Drain into Internal Jugular
Inf. thyroid V. → Drain in brachiocephalic V.
Middle thyroid V. → Drain in Internal Jugular V.

→ Nerve Supply → Symp. - cervical ganglia
Parasymp. - Vagus

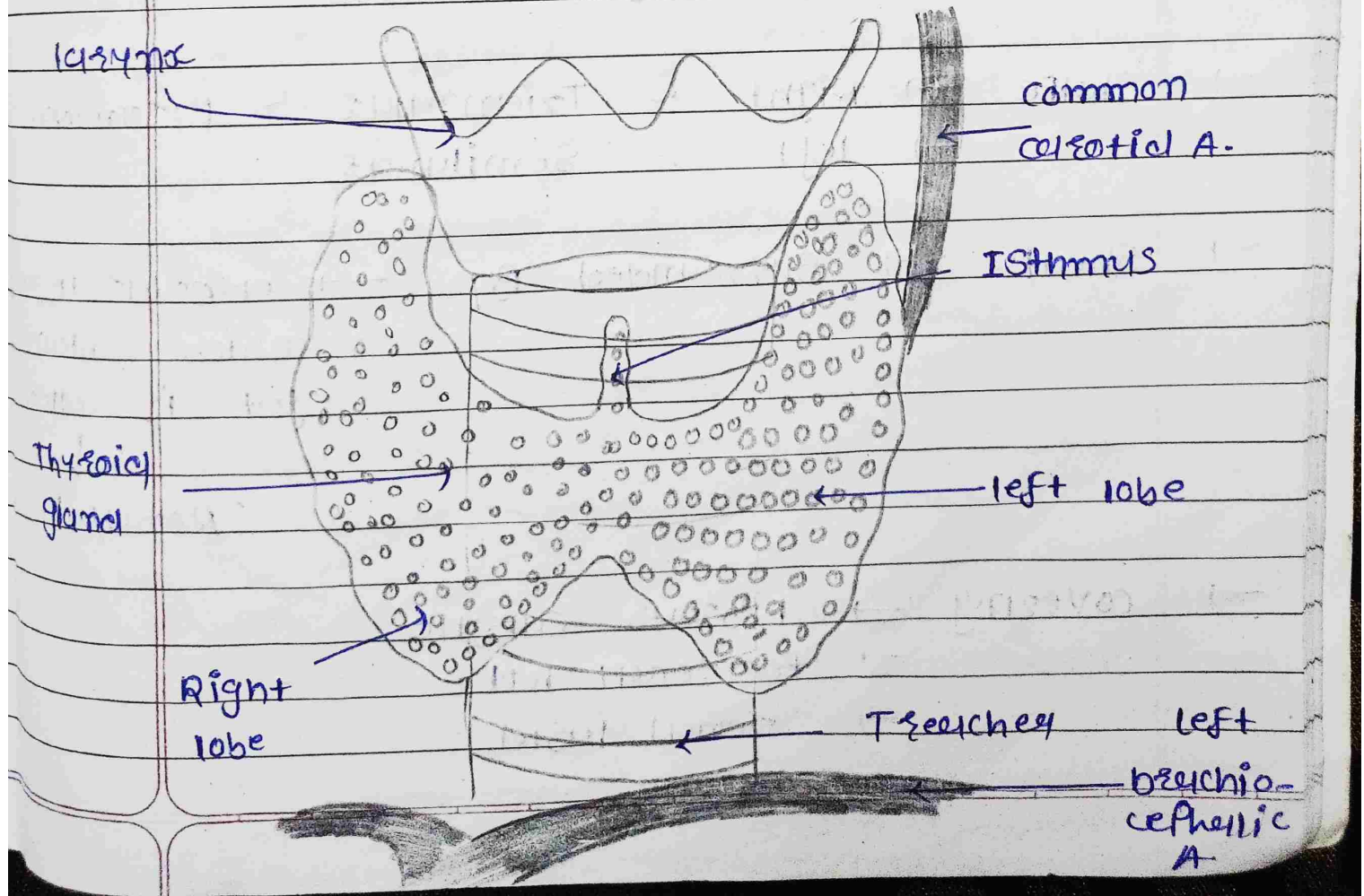
→ Lymph drain → Pre-laryngeal
Pre-tracheal
Para-tracheal
Deep cervical
} Lymph nodes

→ Clinical significance

1) Goiter :- ~~Im~~ enlarged thyroid gland
:- swelling in neck

2) Hypothyroidism → Does Not Produce Sufficient thyroid Hormon
→ cretinism

3) Hyperthyroidism → excessive thyroid Hormone.



3) Adrenal / Suprarenal gland

[अधिवृक्क ग्रंथी]

→ Pair of endocrine gland, yellow colour
→ Situated on upper pole of kidney

→ Location :- Retro-Peritoneal Space
:- Post. abdominal wall
:- Opposite 11th Intercostal Space and 12th Rib.

→ weight → 4 - 6 gm
→ Size → 5 x 3 x 1 cm.

→ Shape → Right :- Triangular & Pyramidal
→ left :- Semilunar

→ Sheath → Surrounded By → areolar tissue which contain fat is called ↓ Renal fascia

→ covering → Fibrous capsule
→ Perirenal fat
→ Renal fasia

→ Relation –

	Right adrenal gland	left adrenal gland
Ant →	liver, IVC	→ Stomach, Pancreas.
Post →	Diaphragm	→ Diaphragm
Inf →	upper Pole of Right kidney	→ upper Pole of left kidney

• Visceral Relation

Right adrenal (pyramidal)

- Apex
  - Related to Base area of liver
- Base
  - lies on upper Pole of kidney
- Borders
  - ant.
  - Medial
  - lateral
- Surface
  - Anterior
    - IVC
    - Base of liver
    - Duodenum
  - Posterior
    - Right crus of Diaphragm

left adrenal (Semilunar)

ends
- upper
  - Narrow Related to Spleen Post. end.
- lower
  - Rounded
  - Shows Hilum through left supra-Renal V.

Borders
- • Medial
  - left coeliac ganglia
  - left gastric A.
- • lateral
  - Stomach

Surface
- • Anterior
  - Spleen
  - Stomach
  - Pancreas
  - Splenic A.
- • Posterior
  - Diaphragm
  - left Kidney

→ Blood Supply :- Sup. supra Renal A. → Inf. Phrenic
Middle supra Renal A. → abdominal A.
Inferior supra Renal A. → Renal A.

→ Venous Drainage → Right supra Renal V. → IVC
left supra Renal V. → left Renal V.

→ Nerve supply → Preganglionic Sym. Fibres

→ lymphatic → aortic lymph node

→ Hormon Secretion → Cortisol
→ Aldosterone
→ Androgens
Adrenal Medulla → Adrenalin (epinephrin)
→ Noradrenaline (Nor-epi)

→ Histology –

Adrenal cortex → 80%
Adrenal Medulla → 20%

Cortex (80%)
– Develop from – embryonic mesoderm

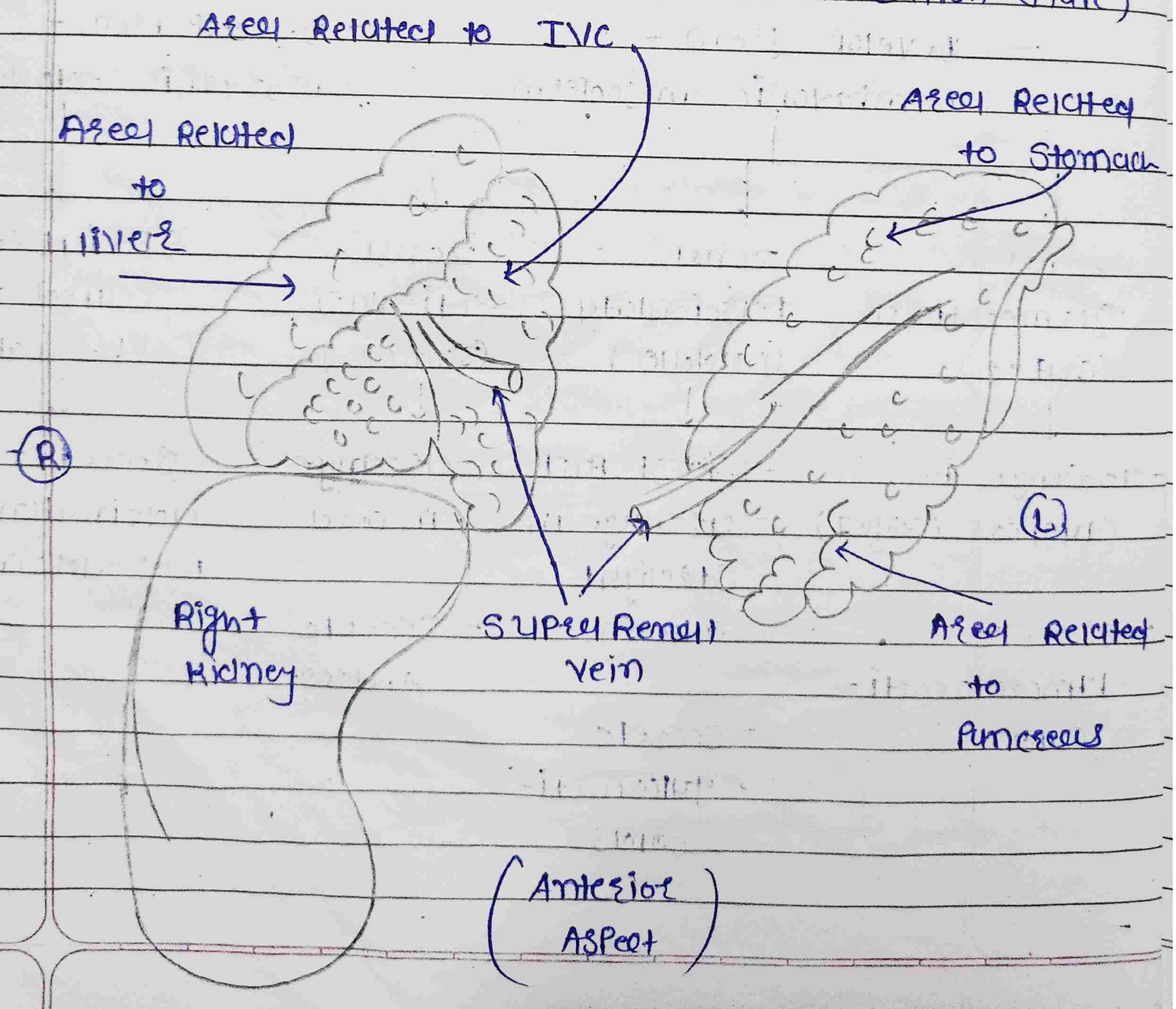
Medulla (20%)
– Develop from – embryonic ectoderm

Zone Glomerulosa (Outer)	Zone Fasciculata (Middle)	Zone reticularis (Inner)	Special cells called as Chromaffin
↓	↓	↓	↓
Arrange in clusters (Arch)	– Widest part – Arrange in straight columns	– Arrange in cord	Secret – Adrenalin, Nor-adrenalin
– Secrete · Mineralocorticoids	– Secrete · Glucocorticoids	– Secrete · Androgens	

→ Clinical Significance

1) Addison's Disease → Damage adrenal cortex → gland do not produce the Steroid Hormon
   - cortisole
   - aldosterone

2) excessive Secretions → various Disease
   - cushing syndrome
   - virilization (female)
   - feminization (male)



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4) Thymus gland –

(बालग्रैवेयक ग्रन्थि)

→ This is a Primary Lymphoid and endocrine gland

→ Thymus is Heart of Immune System
→ It is a first Lymphoid organ where T. Lymphocyte maturation

→ Location :- Sup. Mediastinum of thorax.

- extending above lower part of Neck

→ weight = at birth → 10 - 15 gm
at Puberty → 30-40 gm.

→ Structure := Bilobe
↓ Right lobe ↓ left lobe
- each lobe divid into lobule

→ covering → Fibrous capsule

→ Relations

Anterior	Posterior	Lateral
↓	↓	↓
- Sternum	- Pericardium - Arch of aorta - Great vessel	- Lungs - Pleura

→ Histology

- Chief cell is → Thymic epithelial cell
  → thymocytes

epithelial → epitheliocytes are morphological → divided into Types I - 6

→ Blood supply :- Internal thoracic A.
:- Inferior thoracic A.

→ Veins :- left brachiocephalic vein
:- Internal thoracic vein

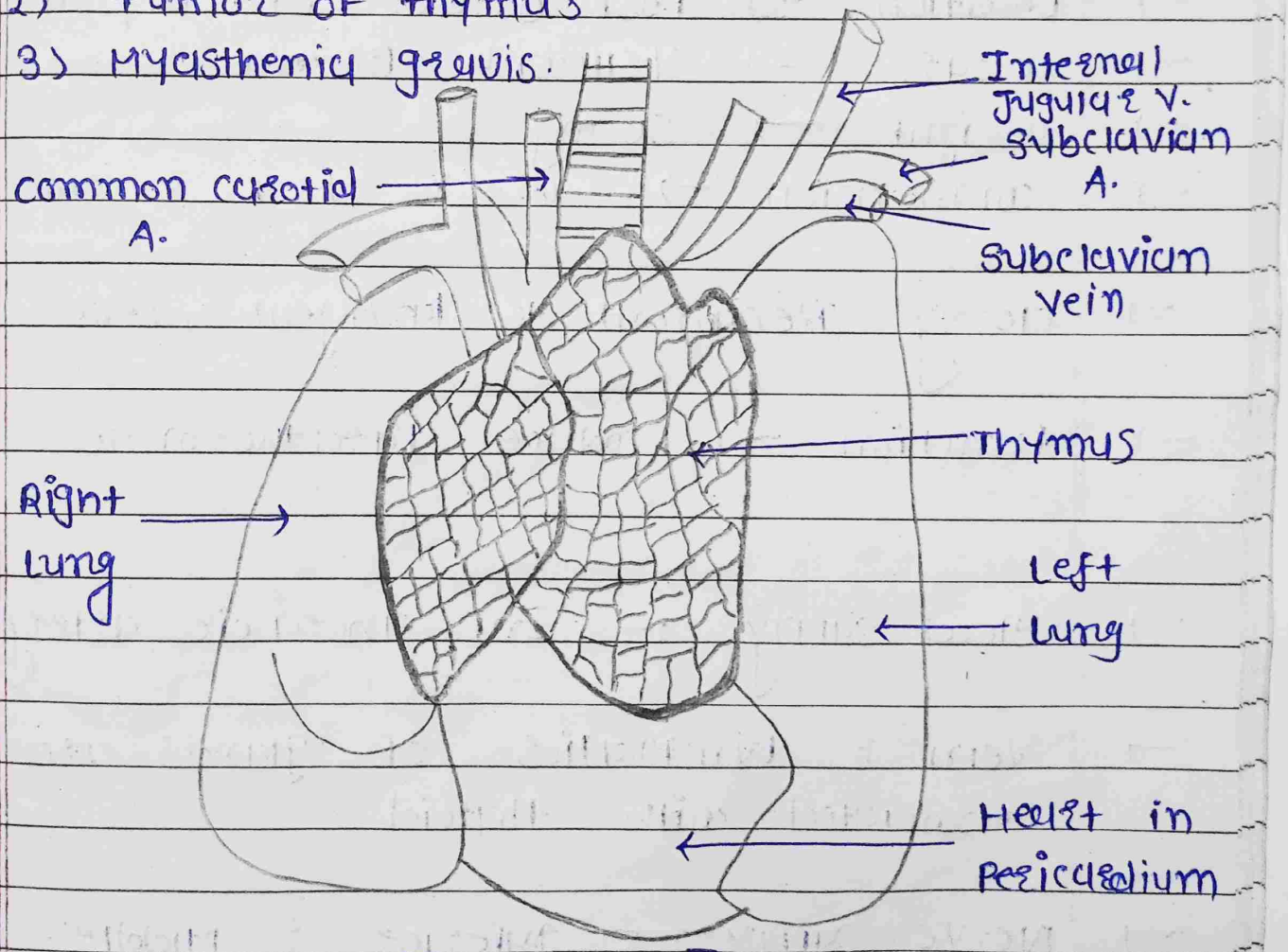
→ Nerve :- Sympathatic fibers → thoracic ganglion
Pre symp. → vagus.

→ In adult Much of its substance is Replaced by fat & fibrous tissue. But thymic tissue Nerve disappear Completely

→ Functions & Hormons :- thymosin → T cell Maturation
:- thymopoietin → Immune Regulation
:- thymulin → Immune competence

→ Hormones secreted → Clinical anatomy

1) thymic enlargment
2) tumor of thymus
3) Myasthenia gravis.



[Ant. aspect]

5) Parathyroid gland —

[परा अवटु ग्रंथि]

→ 2 Pair of gland
  i) Superior ×2
  ii) Inferior ×2
  ——
  4

→ Location → Post. Border of thyroid gland
→ colour → Yellowish - Brown
→ weight → 50 mg
→ Dimension → 6 × 4 × 2 cm

→ closely Recurrent to laryngeal nerve.

→ Function → Produce Parathormone ↑ Ca^{+2} level.

→ Blood Supply :- Inf. Thoracic artery

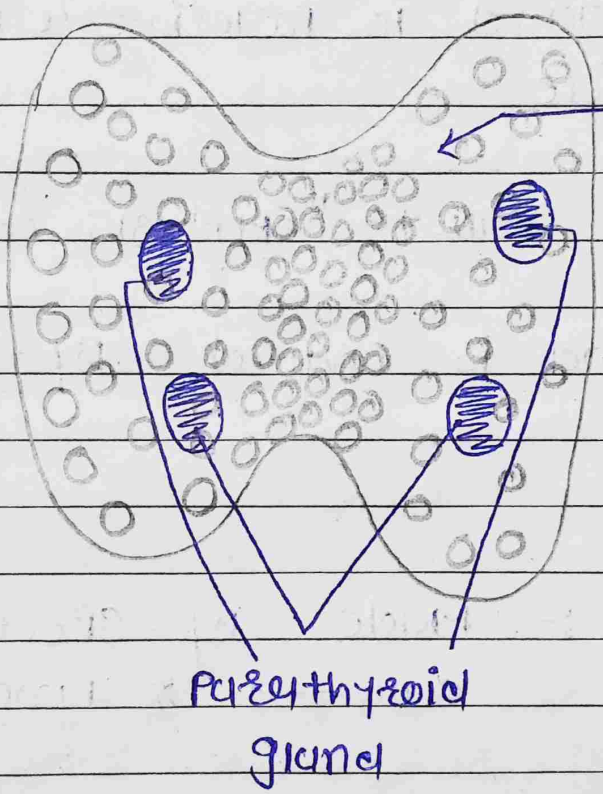
→ Vein & Lymphatics of glands are associated with thyroid.

→ Nerve Supply — Superior & Middle cervical ganglia.

→ clinical anatomy -

1) Hypo - Parathyroidism → muscle spasm
2) Hyper - Parathyroidism → Bone pain
Renal Stone

3) thyroidectomy



6) Pineal gland –

[तृतीय नेत्रकोदिक]

→ Small endocrine gland

→ Location :- In epithalamus.

→ It is attached to Posterior wall of the 3rd ventricle

→ They also called "epiphysis cerebri"

→ Pineal gland is covered By → connective fissue

→ Histology :- Made By Specific Secretory cell → 1% Pinealocytes.

Separated from one another By Neurological cell.

→ Function :- Secrete – Melatonin

Sets Body's Biological clock.
- It cause changs in Skin colour.

→ Hormon secretion → melatonin

→ Relation

Anterior → 3rd ventricle
Posterior → Mid Brain
Superior → corpus callosum
Inferior → Quadrigeminal plate

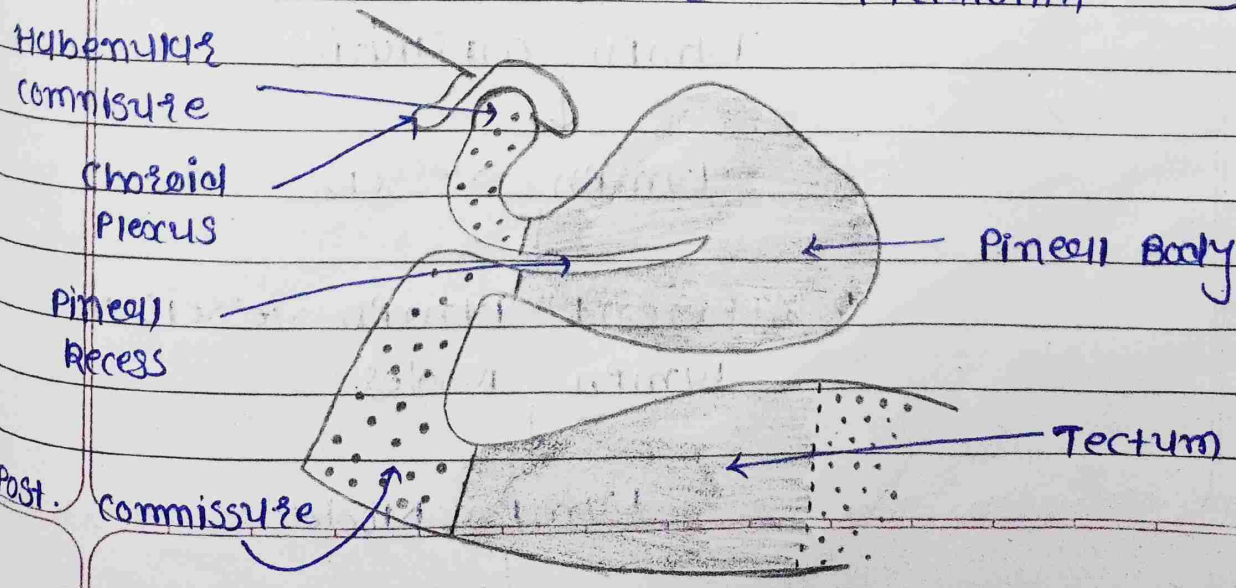
→ Blood supply → Post. cerebral a.

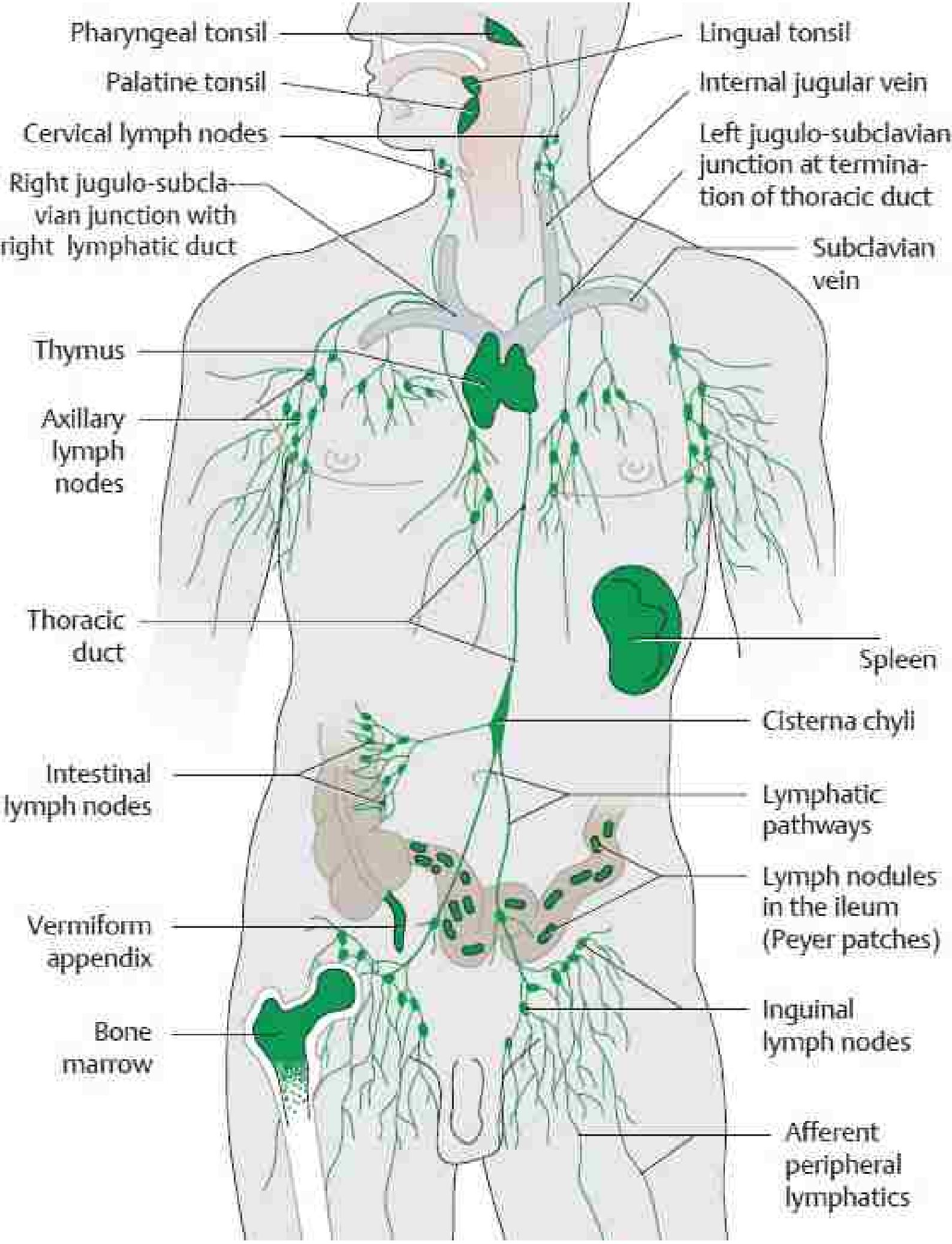
→ venous drainage → Drain into great cerebral vein

→ Nerve supply → Superior cervical ganglion

→ Clinical Anatomy...

1) Pineal tumor
2) Sleep Disorder [Due to Disturbed Melatonin]




Pharyngeal tonsil
Palatine tonsil
Cervical lymph nodes
Right jugulo-subcla-
vian junction with
right lymphatic duct
Lingual tonsil
Internal jugular vein
Left jugulo-subclavian
junction at termina-
tion of thoracic duct
Subclavian
vein
Thymus
Axillary
lymph
nodes
Thoracic
duct
Spleen
Cisterna chyli
Intestinal
lymph nodes
Lymphatic
pathways
Lymph nodules
in the ileum
(Peyer patches)
Vermiform
appendix
Bone
marrow
Inguinal
lymph nodes
Afferent
peripheral
lymphatics

Lymphatic System =

→ The lymphatic system is a circulatory system made up to lymph vessels. which are much like Blood Vessels.

→ It drain extra fluid (called lymph) that has passed out the blood and into tissue and Returns it back to the Blood.

→ Lymph :- a clear, watery fluid that carries WBC, Nutrients & coust through Body via the lymphatic system.

→ Helps to Protect Body against Infection By Providing lymphocytes and other cells.

Inter-cellular space containing Interstitial Fluid.

↓

Lymph capillaries

↓

Lymph vessels

↓

Afferent lymph vessels to lymph Nodes

↓

Lymph Node

↓

Efferent lymph vessels:
from lymph Node
↓
lymph duct & Trunk
- lumbar
- Intestinal
- Broncho-mediastinal
- Subclavian
- Jugular on either side
↓
2 large duct are formed

Right lymphatic Duct
↓
Drain into
- Right Inter Jugular
- Right Subclavian V.

Thoracic Duct
↓
Drain into
- left Inter J.
- left Subclavian veins.

→ Lymphatic Organs –

Primary lymph. organ
↓
- Red Bone Marrow
- Thymus

Secondary lymph organ
↓
- Lymph Nodes
- Spleen
- Lymphatic Nodules (Peyer's Patches)

1) Lymphatic capillaries (લસિકાકેશિકાઓ)

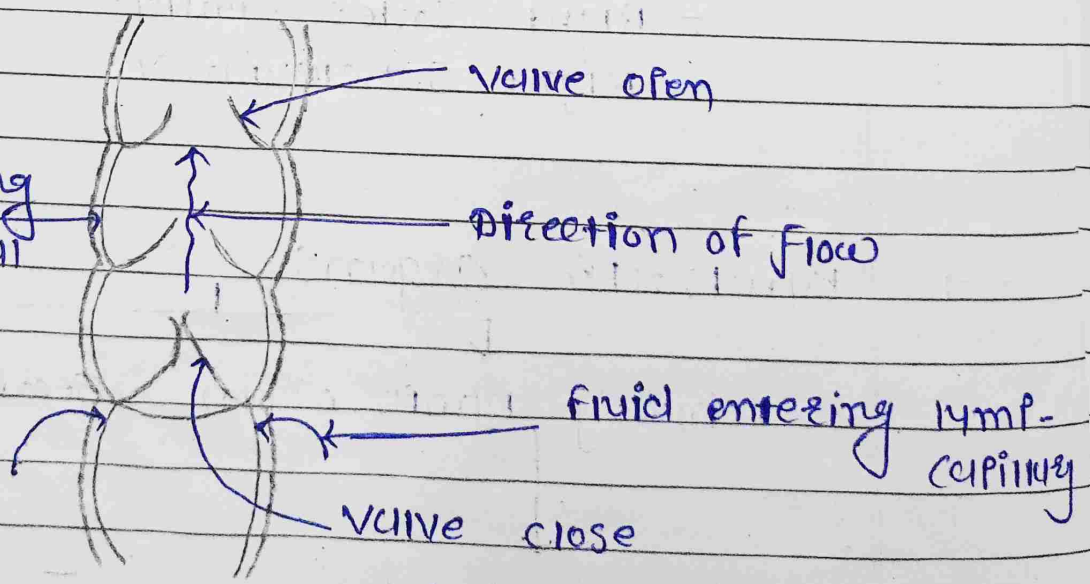
→ Thin walled, closed ended and present in the space BW cells.

→ No lymphatic capillary
- epidermis
- Hairs
- Nails
- cornea
- Bone marrow
- CNS etc--

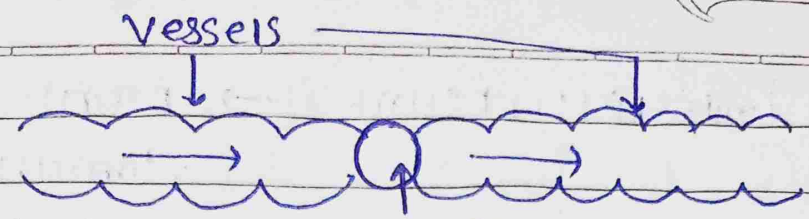
2) Lymphatic Vessels (લસિકા વાહિનો)

→ Many lymphatic capillaries join together and forme lymphatic vessels.

→ Thin wall & contains valves.



→ Lymph Nodes are placed at Intervals
↓
બે વેસલ્સ નો વચ્ચે

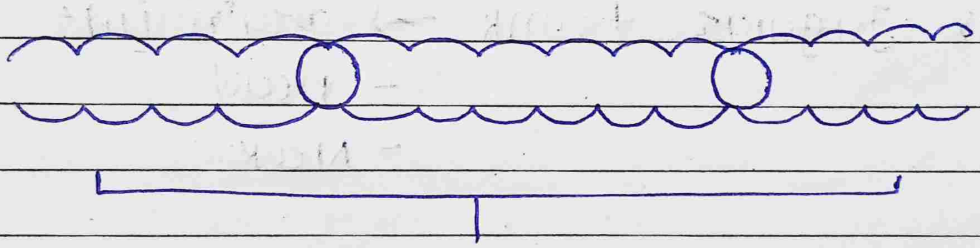


efferent vessels

efferent vessels

→ acc. to source place.
- Superficial lymph vessels.
- Deep lymph vessels.

3) Lymphatic Trunk.



→ Vessels coming out the nodes join together and form lymphatic Trunk.

i) Lumbar Trunk :- Drain into
- Lower limb
- Pelvic wall
- abdominal wall
- Kidneys Kidneys.
- Supra Renal glands.

ii) Intestinal trunk → Drain into -
- Stomach
- Intestinal wall
- ~~Lungs~~ Part of liver
- ~~Pancreas~~ Pancreas
Spleen.

iii) Broncho-mediastinal Trunk → Drain into
- Thoracic wall
- Lungs
- Heart

iii) Subclavian Trunk → Drain into
- Upper limb

iv) Jugular trunk → Drain into
- Head
- Neck.

(*) Lymphatic Duct -

→ each Trunk Drain into great terminal vessels -

1) Thoracic Duct or Left lymphatic Duct
2) Right lymphatic Duct.

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1) Thoracic Duct
&
Left lymphatic Duct
(वक्षीय)

→ It is Tubular structure ; largest lymph vessels.

→ Length :- 45 cm.

→ Diameter :- 2-3 mm.

→ Located to Lower Part of Neck to Upper Part of Abdomen.

→ In upper Part of Abdomen → Begins as continuations of cisterna chyli

→ In lower Part of Neck → ends by opening B/w. Left Subclavian & left Internal Jugular vein.

→ Here Drains lymph in to venous Blood.

• Cisterna chyli

- Place → L2 vertebral.
→ Behind the aorta (Right side)
→ near to Right crus of Diaphragm

→ Receives lymph from → Right & left lumbar Trunk , Intestinal trunk.

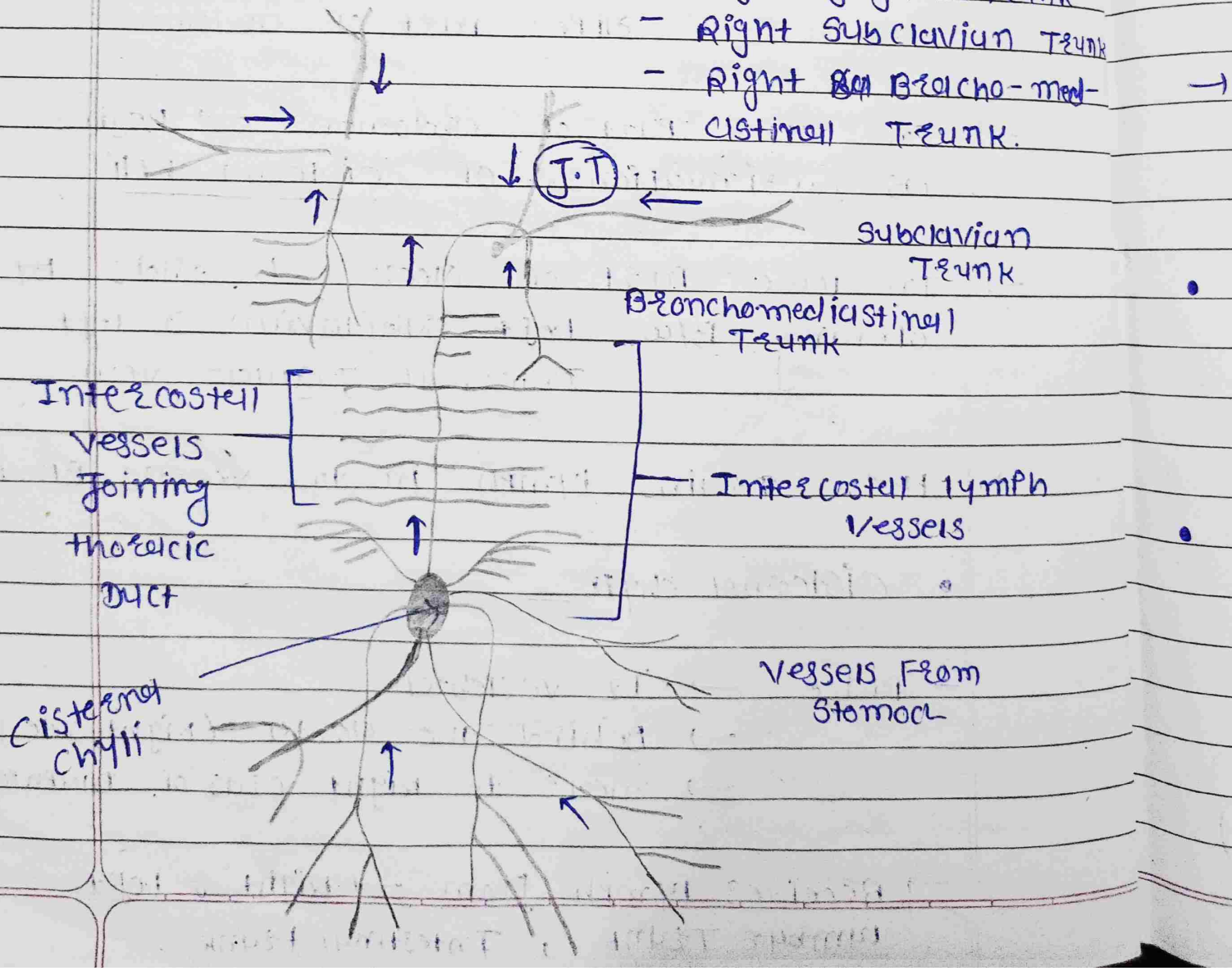
→ It is enlargeted lymphatic sac 5-7 cm long.

2) Right lymphatic Duct —

→ Length is 1.25 cm

→ opens at the Junction of Right Inte&Jugular and Right Subclavian vein.

→ Recives lymph from :— Right Jugular Trunk
- Right Subclavian Trunk
- Right Broncho-mediastinal Trunk.



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* Lymph Nodes ——
(लसिका ग्रंथियां)

→ Each lymph Node consist of a connective tissue network and Numerous lymphocytes.

→ Bean shape gland

→ Length :- 1 to 25 mm
→ 600 lymph nodes are found in Body.

→ Specially its group Present – axill
– Neck
– Knees.

• Capsule –

– lymph nodes are covered by capsule made up to collagen fibers.

• Microscopic structure ——

1) Stroma of lymph node.
– capsule of lymph node enter the substance
Node ← divide Trabecule ← Form

2) Parenchyma of lymph nodes -

- Divided into 2 part

Cortex

- Outer
  - Primary
    - (Nodules (follicles) are present)
    - Clusters of B cells.
  - Secondary
- Inner
  - consist - T cells and Dendritic cells.
  - Nodule absent

Medulla

- consist
  - B cells
  - Plasma cell
  - Macrophage

→ Lymphatic vessels of lymph Node:

Afferent → enter the lymph node

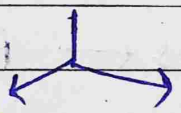
Efferent → leaving the lymph node (Small pit called Hilum)

→ Lymphatic sinyes.

- Lymph enters the Node channels called Sinuses.

- contain → 1) Network of Reticular Fibers
2) Lymphocytes
3) macrophages.

- Acc. to Location
1) Sub Scapular sinyce → located internal to capsule.
2) Trabecular sinyce → Present Parallele to Trabecula.
3) Medullary sinyce → Present the Medulla.



Superficial group of lymph Node

Deep group of lymph Node

↓

Drain to Deep fascia.

1) Superficial inguinal lymph Node.
- Skin
- lower limb
- Perineum
- external genital organs
- umbilicus

2) axillary lymph node
- skin of upper limb
- trunk above the umbilical
- clavical Region
- distal half of neck

3) cervical lymph nodes
- scalp
- face
- neck.

→ Function of lymph node

1) filter for lymph → lymph enter lymph node ← Foreign substance is trapped.

Macrophages ← destroy them → Phagocytosis.

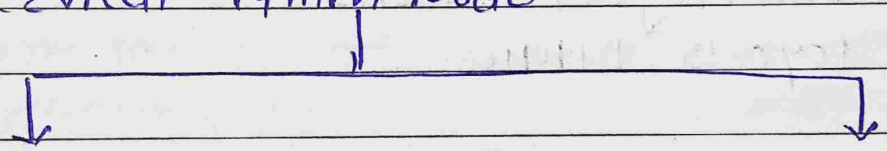
2) lymph node produce B & T cells.

→ Important lymph Nodes-

1) axilla lymph Node
- 20-30 in Number
- 6 group.

i) anterior & pectoral group
ii) Posterior & Subscapular group
iii) lateral group
iv) central group
v) Infra-clavicular & Deep Pectoral
vi) apical group

2) cervical lymph Node



Superficial
- Submental
- mendibular
- Sub Medibular
- Parotid (Pre auricular)
- Mastoid (Post auricular)
- occipital
- Superficial cervical Nodes

Deep
- Pre laryngeal
- Pre tracheal
- Para tracheal
- Retropharyngeal

3) Pre-aortic & Para-aortic

↓ Pre-aortic
- celiac
- Sup. Mesentric
- Inf. Mesentric

↓ Para-aortic
- kidney
- adrenal gland
- Reproductive system
- abdominal wall

] lateral aortic lymph node

- Other lymphatic Tissue

1) Palatine tonsils
2) Pharyngeal tonsils
3) Peyer's patches.

- Lymphatic Nodule

- egg shaped masses of lymphatic tissue which are not surround by capsules.

- lining the - GIT, urinary system, Reproductive & Respiratory system mucous membrane

→ MALT Mucosa associated lymphatic Tissue

★→ Thymus & Spleen are completely made to lymphoid Tissue

Date
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- Clinical Anatomy

1) elephantulisis → enlargment and Hardening of limbs or. Body parts Due to swelling in tissue
   - Due to obstruction of lymphatic vessels.

2) enlarged superi clavicular lymph Nodes → commonly observed
   - tuberculosis
   - Hodgkins Disease
   - cancer of Breast, chest and arm

* Spleen —

* Thymus —

* Spleen :-

→ Spleen is a lymphatic organ connected to Blood vascular system

→ Act as a filter for blood and plays an important role in immune response for Body.

- Location :- Mainly in left Hypochondrium and Partly Epigastrium.
- Shape :- Wedge Shape (tetrahedral Shape)
- Dimension :- Soft, Highly vascular and dark purple in colour.
  :- on average :- 2.5 cm thick
  :- 7.5 cm broad
  :- 12.5 cm long.
- Position :- lie obliquely along the long axis of 10th Rib.

make an angle of 45° with Horizontal Plane

:- Directed - downward, forward and laterally.

- External Feature :-

i) Two Ends _

a) Anterior or/. Lateral end :- expanded and is more like border
- Directed :- downward and forward

b) Posterior or/. Medial end :- Round
- Directed :- upward and back ward.

ii) Three Border :-

a) Superior - Characteristically notched near anterior end

b) Inferior - Rounded

c) Intermediate - also Rounded.

iii) Two Surface :-

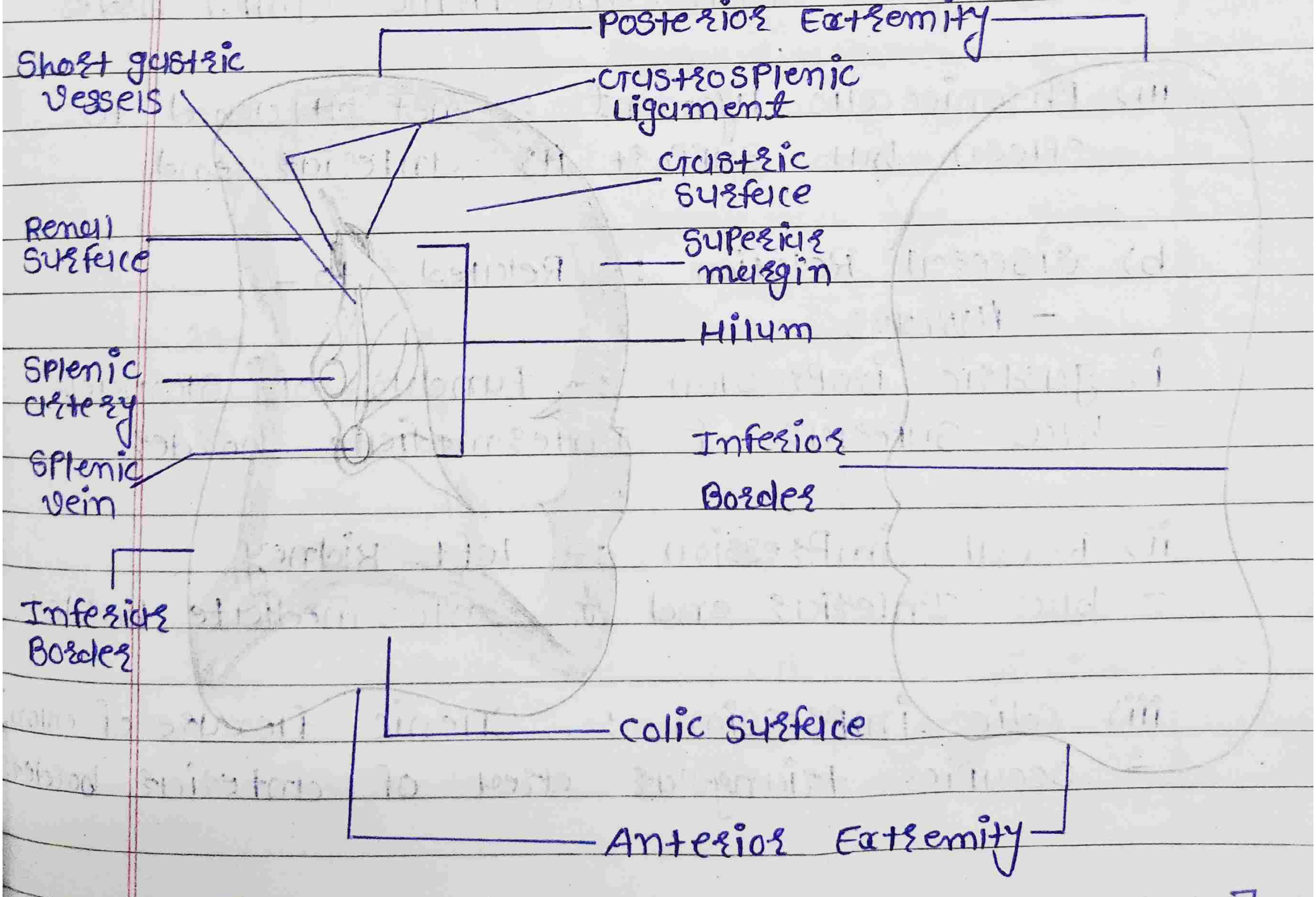
a) Diaphragmatic :- convex & smooth.

b) Visceral :- Concave & Irregular.

iv) Hilum :-

→ Lie b/w superior and Intermediate Border.

→ Pierced By branches and tributaries of Splenic vessels.



[Spleen visceral & Diaphragmatic surface]

• Relations

a) Peritoneal Relations :- Spleen is surrounded by peritoneum and suspended by ligament.

i) Gastrosplenic ligament :- extend from Hilum of spleen to greater curvature of stomach
- contain :- Short gastric vessels
:- Lymphatic & Sympathetic nerve

ii) Lienorenal ligament :- extend from Hilum of spleen to anterior surface of left kidney
- contain :- tail of Pancreas
:- Splenic vessel.
:- Pancreaticosplenic lymph nodes.

iii) Phrenicocolic ligament :- not attached to spleen but support its anterior end.

b) Visceral Relation :- Related to -
- ~~Fundus~~

i) gastric impression :- Fundus of stomach
- b/w superior & Intermediate border.

ii) Renal impression :- left kidney
- b/w Inferior end & Intermediate border

iii) Colic impression :- Splenic flexure of colon.
- occupies triangular area of anterior border.

iv) Pancreatic impression :- tail of Pancreas.
- b/w Hilum and colic impression.

v) Hilum :- lie of Intermedial part of gastric impression.
- Transmits :- Splenic vessel and nerve
:- Provide attachment to - gastrosplenic and lienorenal ligam.

c) Diaphragmatic Surface.
- Related to diaphragm.
- which Separated the Spleen from Pleura and lung.

- Arterial Supply :- Splenic artery branch of coelic trunk
:- Splenic artery is ~~tortuous~~ in its course to allow movement of Spleen

- Venous Drainage :- Splenic vein branch of SMV.

- Lymphatic Drainage :- Splenic tissue proper has no lymhattics.

- Nerve Supply :- Sympathetic fibres from colic plexus.

- clinical anatomy

i) Palpation of Spleen :- A normal Spleen is not Palpable. An enlarged Spleen can be felt under the left costal margin. The Spleen becomes Palpable only after it has enlarge to about twice its normal size.

ii) Splenomegaly :- enlargement of Spleen.

iii) Splenectomy :- Surgical Removal of the Spleen.