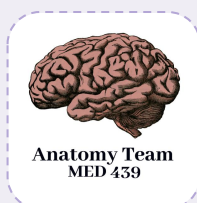


Anatomy of the Pituitary Gland

Editing File

Color index:

	Girls' slides		Boys' slides
	Main content		Extra
	Important		Drs' notes



Objectives:

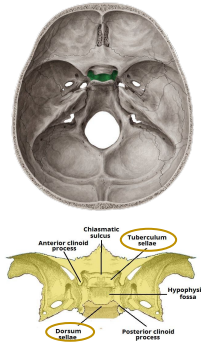
- Describe the position of the pituitary gland.
- List the structures related to the pituitary gland
- Differentiate between the lobes of the gland.
- Describe the blood supply of pituitary gland & the hypophyseal portal system.

Pituitary Gland (Hypophysis Cerebri)

- It is referred to as the master of endocrine gland. **Called the master because it has hormones which controls secretions of other glands**
- It is a small oval structure of 1 cm in diameter. **Returns to normal after childbirth**
- It doubles its size during **pregnancy**.

Position

- lies in the **middle cranial fossa** in the **hypophyseal fossa** of the body of sphenoid bone.
- The hypophyseal fossa has two elevations anteriorly and posteriorly, called **tuberculum sellae** and **dorsum sellae** respectively

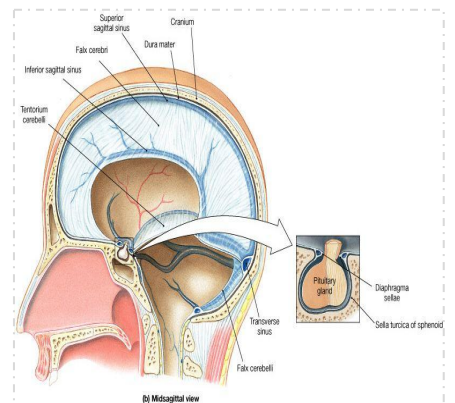
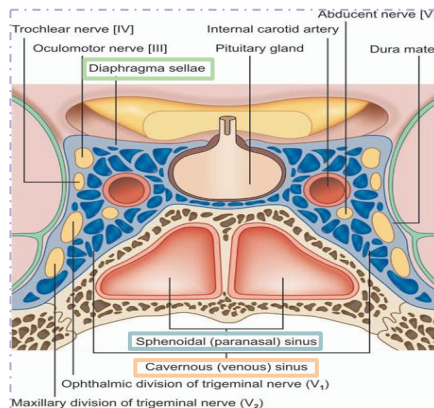
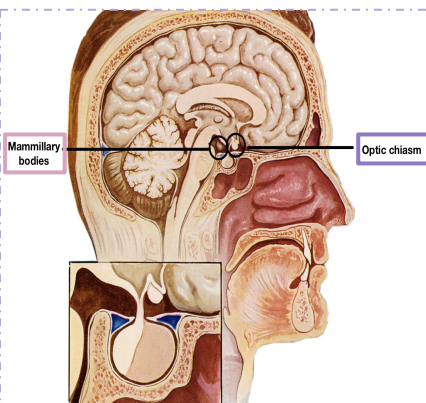


- It is well protected in sella turcica of body of sphenoid.

- Diaphragma sellae: a fold of dura mater covers the pituitary gland & has an opening for passage of infundibulum (pituitary stalk) connecting the gland to hypothalamus. **Infundibulum = Pituitary stalk = hypothalamic-hypophyseal stalk**

Relations

Anterior	● Optic chiasma Clinical significance: a tumor of the pituitary gland will press on the optic chiasma causing bitemporal hemianopia
Posterior	● Mammillary bodies Part of the hypothalamus
Lateral	● Cavernous sinuses Contents within the sinus include: ICA & Abducent
Superior	● Diaphragma sellae
Inferior	● Sphenoidal air sinuses Clinical significance: in operations, they reach the pituitary gland through sphenoidal air sinuses through the nose

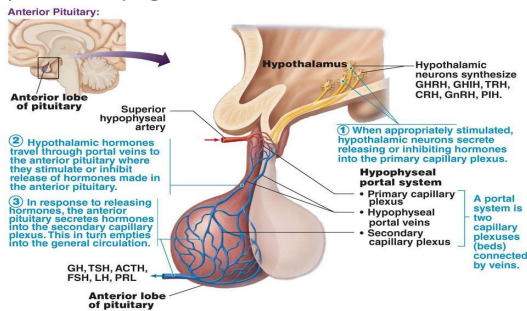


Pituitary gland

Subdivision of pituitary gland

1. Anterior lobe (adenohypophysis)

- It's the true gland, **secrets** hormones
- Hormone- releasing and inhibiting factors produced by hypothalamus use **hypophyseal portal system** of vessels to reach the anterior lobe of pituitary gland.



- depends on blood supply for its function (SHA)

2. Posterior lobe (neurohypophysis)

- It receives a nerve supply from some of the hypothalamic nuclei (supraoptic and paraventricular)
- Connected to hypothalamus through the **hypothalamo-hypophyseal tract**, **stores** hormones that are secreted by hypothalamic nuclei. **It's cell body is in the hypothalamus, and it's axons passes all the way through the infundibulum to the posterior lobe.**
- The axons of these nuclei convey their neurosecretion to the posterior lobe through **hypothalamo-hypophyseal tract** from there it passes into the bloodstream
- Depends on hypothalamic-hypophyseal tract for its function

Blood supply of pituitary gland

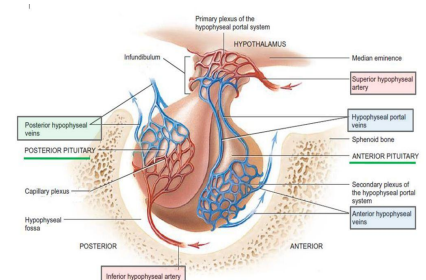
Arterial

Internal Carotid artery branches:

- 1- **Superior hypophyseal artery** begins at and supplies the infundibulum & forms a capillary network from which vessels pass downward and form **sinusoids** into the anterior lobe of pituitary gland (**hypophyseal portal system**).
Supplies the stalk and the anterior lobe. Carries precursors of hormones from the hypothalamus to the cells of the pituitary gland to synthesize hormones.
- 2- **Inferior hypophyseal artery** supplies posterior lobe of pituitary gland.
Doesn't form sinusoids. Doesn't carry precursors of hormones

Venous

hypophyseal veins drain into **cavernous sinuses**



Summary

Pituitary Gland

- It is referred to as the master of endocrine gland.
- It is a small oval structure of 1 cm in diameter.
- It doubles its size during pregnancy.

Relations

- Anterior :** Optic chiasma **Posterior :** Mammillary bodies
Superior: Diaphragma sellae **Inferior:** Sphenoidal air sinuses
Lateral : Cavernous sinuses

Position

- lies in the middle cranial fossa in the hypophyseal fossa of the body of sphenoid bone
- It is well protected in sella turcica (hypophyseal fossa) of body of sphenoid
- A fold of dura mater (Diaphragma sellae) covers the pituitary gland & has an opening for passage of infundibulum (pituitary stalk) connecting the gland to hypothalamus.

Anterior lobe (adenohypophysis)

- True gland, secretes hormones
- Hormone-releasing & inhibiting factors produced by hypothalamus use **hypophyseal portal system** of vessels to reach the anterior lobe of pituitary gland

Pituitary gland is subdivided into

Posterior lobe (neurohypophysis)

- Receives a nerve supply from some of the hypothalamic nuclei (supraoptic & paraventricular)
- Connected to hypothalamus through **hypothalamo-hypophyseal tract**, stores hormones secreted by hypothalamic nuclei
- Axons of these nuclei convey their neurosecretion to posterior lobe through hypothalamo-hypophyseal tract then it will pass into the bloodstream.

Arterial Supply

- **Superior hypophyseal artery** : supplies infundibulum & forms a capillary network from which vessels pass downward & form sinusoids into the anterior lobe of pituitary gland (hypophyseal portal system).
- Inferior hypophyseal artery: supplies posterior lobe of pituitary gland

Venous Supply

- Hypophyseal veins drain into cavernous sinuses.

MCQs

Q1: Which one of the following structures is superior to the pituitary gland? -Dr's slides

- A- Optic chiasma
- B- Diaphragma sellae
- C- Mammillary bodies
- D- Sphenoidal air sinuses

Q2: Which one of the following venous sinuses drains hypophyseal veins?-Dr's slides

- A- Superior sagittal
- B- Cavernous
- C- Transverse
- D- Sigmoid

Q3: The pituitary gland lies in:

- A- Middle cranial fossa
- B- Anterior cranial fossa
- C- Posterior cranial fossa
- D- Lateral cranial fossa

Q4: Which lobe is connected to the hypothalamus by hypothalamo-hypophyseal tract :

- A- Anterior lobe
- B- Lateral lobe
- C- Inferior lobe
- D- Posterior lobe

Q5: The pituitary stalk is supplied by which artery:

- A- Inferior hypophyseal
- B- Basilar artery
- C- Superior hypophyseal
- D- Cavernous sinuses

Q6: The anterior relation of pituitary gland :

- A- Mammillary bodies
- B- Cavernous sinuses
- C- Optic chiasma
- D- Sphenoidal air sinus

Answers: [Q1:B] [Q2:B] [Q3:A] [Q4:D] [Q5:C] [Q6:C]

SAQs

Q1: Mention All relations of the Pituitary gland:

- Anterior: optic chiasma
- Superior: Diaphragma sellae
- Lateral: Cavernous sinus

- Posterior: mammillary bodies
- Inferior: Sphenoidal air sinuses

Q2: Mention the Venous Drainage of the pituitary gland:

- hypophyseal veins drain into cavernous sinuses.

Q3: Mention the arterial supply of the Pituitary gland:

- Through of internal carotid artery branches
- 1- Superior hypophyseal artery : supplies infundibulum and anterior lobe
- 2- Inferior hypophyseal artery: supplies posterior lobe

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