

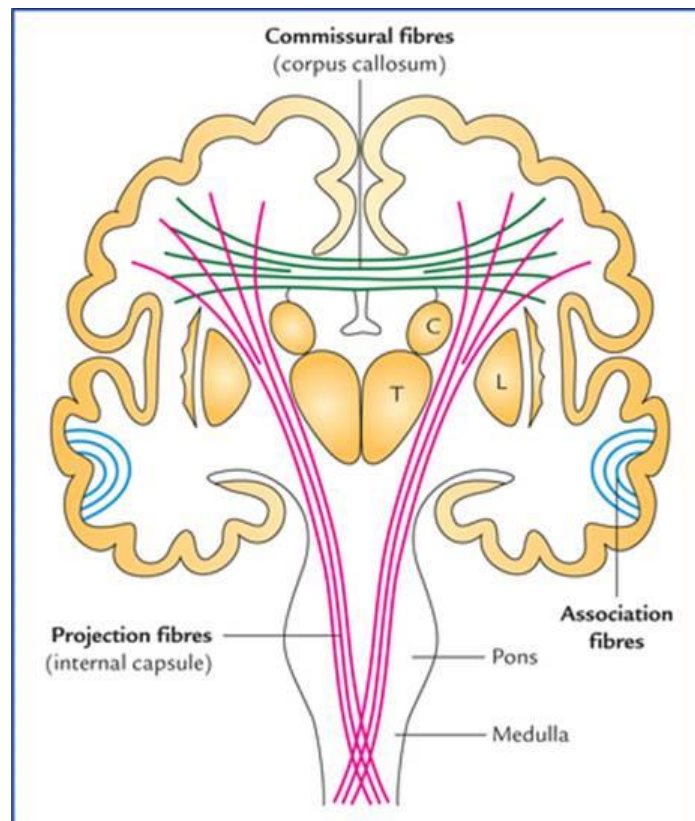
## Internal Structure of the Cerebral Hemisphere

- ★ Each cerebral hemisphere consists of:
  - 1) **Gray matter** (cerebral cortex) on the surface.
  - 2) **White matter** forming the core.
  - 3) **Basal ganglia** (collections of **gray matter** embedded in the white matter core, near the base of the brain).
  - 4) **Lateral ventricle** (cavity).

### The White Matter of the Cerebral Hemisphere

- ★ It consists of **myelinated nerve fibers** which are devoid of neurolemmal sheaths (myelinated **by oligodendrocytes**).
- ★ There are **3 types** of fibers in the white matter:

- I) **Association** fibers.
- II) **Commissural** fibers.
- III) **Projection** fibers.



### I) Association Fibers:

- They are fibers which **connect different cortical areas** in the **same** hemisphere.
- There are **two types** of association fibers:

#### 1) Short association fibers:

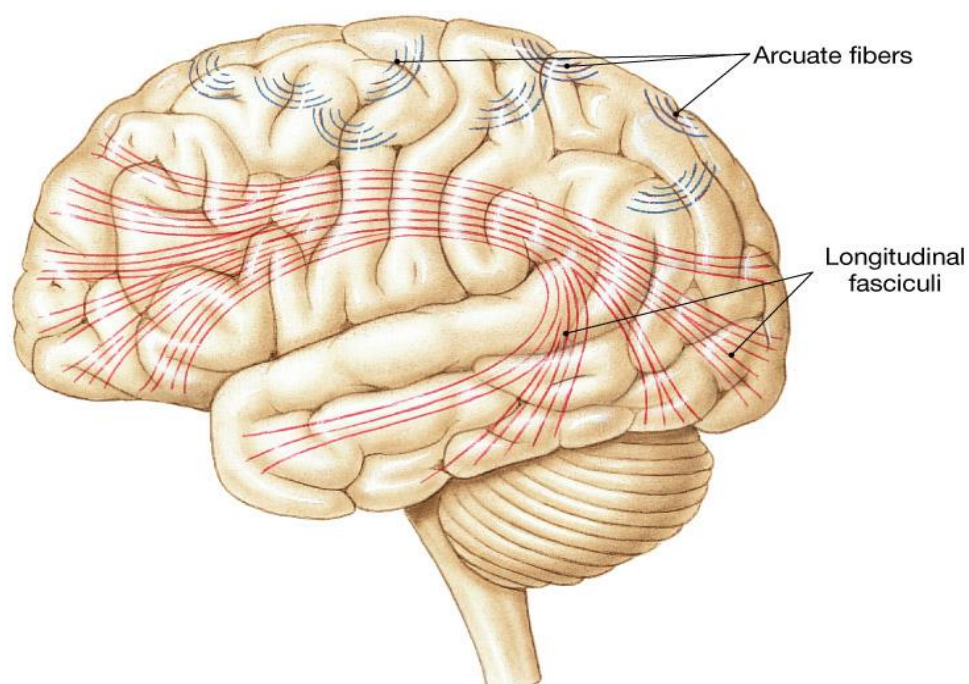
- They form **U-shaped bands** called the **arcuate fibers** immediately deep the cortex.
- **Function:** They connect **adjacent gyri** with one another e.g. sensory area with sensory association area.
- They are found **in all parts** of the hemisphere.

#### 2) Long association fibers:

- They are **fasciculi that connect the different distal lobes of the same hemisphere.**
- There are **6** bundles of long association fibers:

##### 1) The superior longitudinal fasciculus:

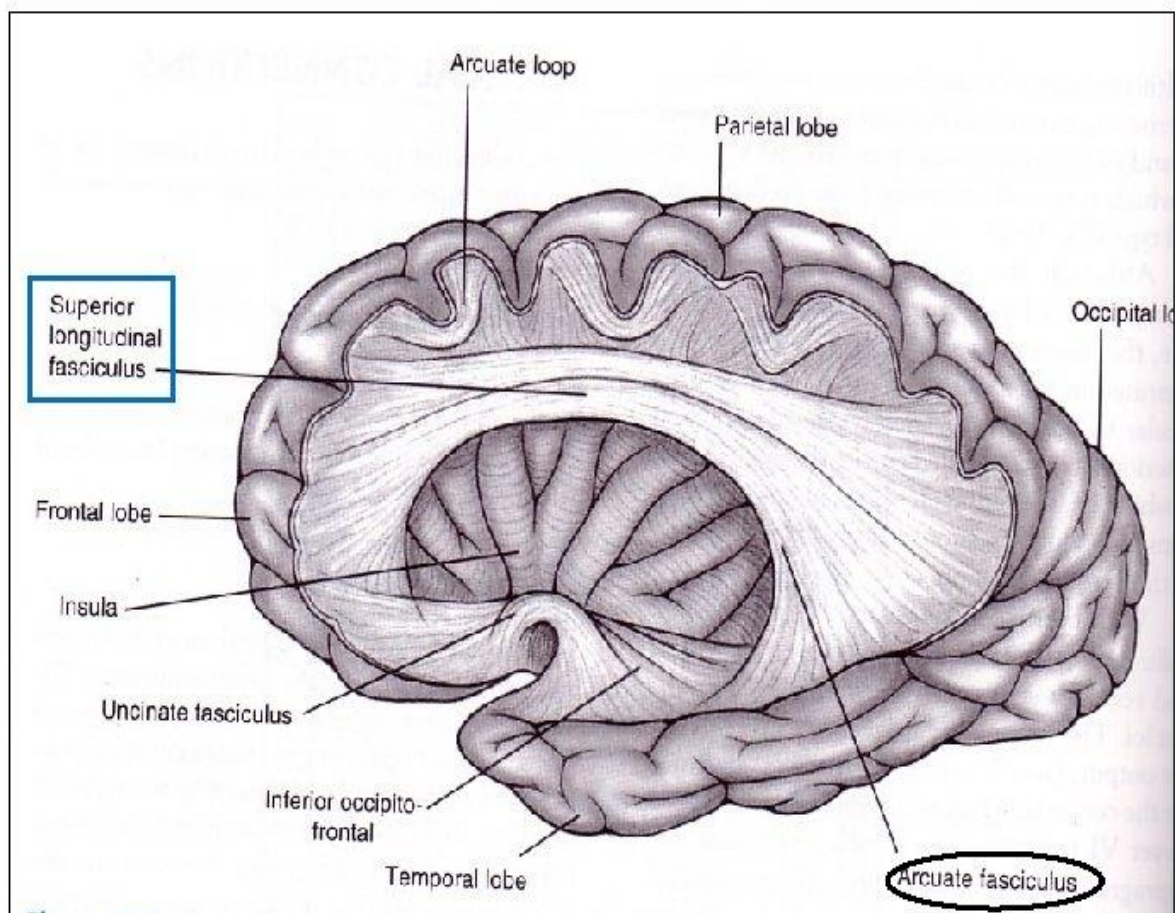
- It extends immediately **above the insula** from the **frontal lobe** to the **occipital and temporal lobes.**



- **Function:** It has important **language** function as it connects the different cortical areas on the lateral surface of the hemisphere (as in number 2).

**2) Arcuate fasciculus:**

- It is the **lower arching fibers of the superior longitudinal fasciculus** which connects **frontal** lobe with the **temporal** lobe.
- **Function:** It is important for **speech** as it **connects** Broca's area to the motor area, Wernich's area, visual area and memory area.



### 3) Fronto-occipital fasciculus:

- It begins in the **frontal pole**, passes medial to superior longitudinal fasciculus and end in the **occipital pole**.

### 4) The inferior longitudinal fasciculus:

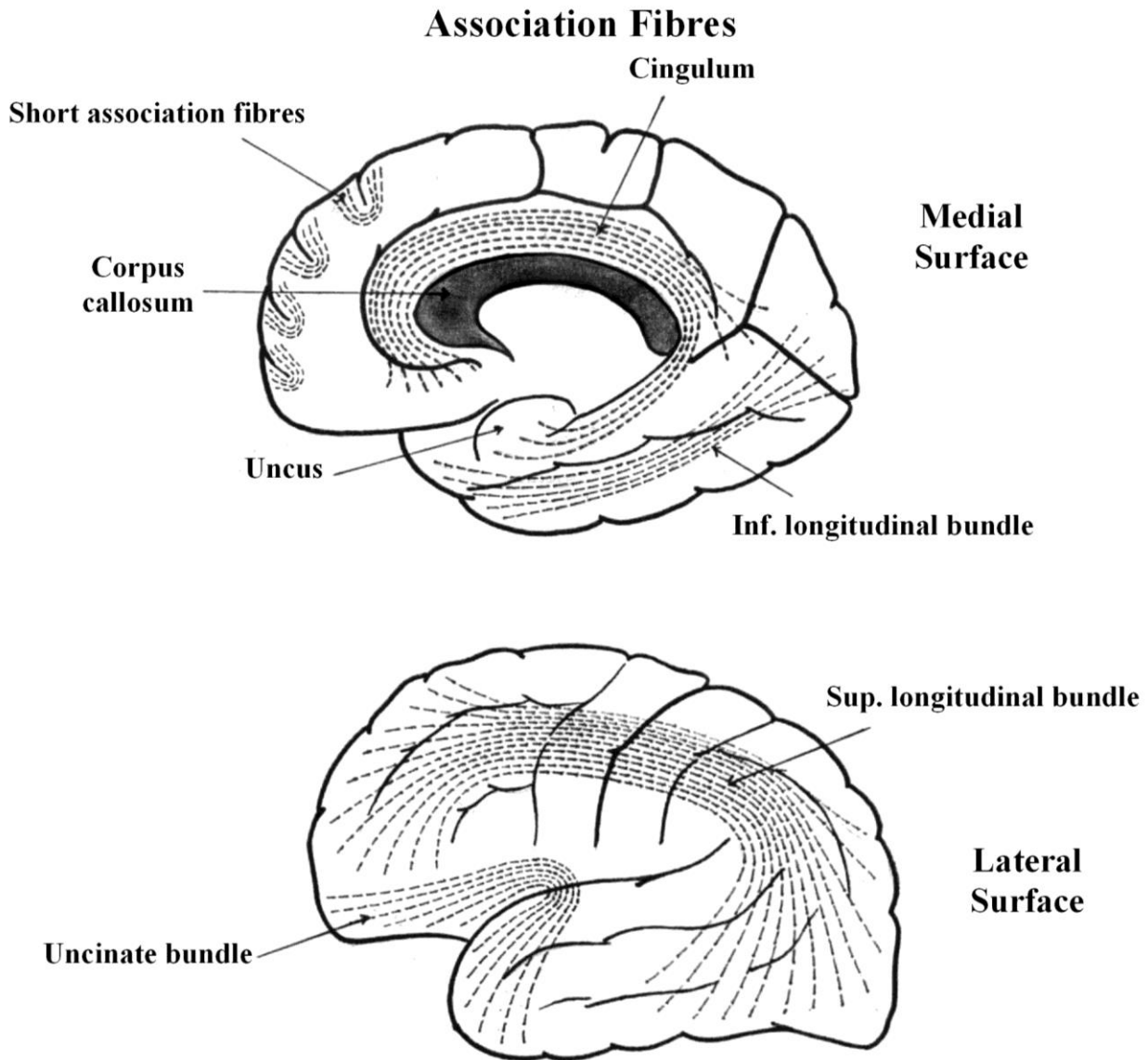
- It runs horizontally from the **temporal pole** to the **occipital pole** near the **inferior surface** of the hemisphere.
- **Function:** It is important for **visual recognition** because it connects the visual area with the memory area.

### 5) The uncinate fasciculus:

- It makes an **arch around the stem** of the lateral fissure to connect the **orbital gyri** of the frontal lobe with the **temporal pole**.
- **Function:** It is important for **behavioral regulation**.

### 6) The cingulum:

- It lies mostly in the **cingulated gyrus**; forming an incomplete circle around the **corpus callosum** very near to the **median** plane.
- It **begins** below the **rostrum** of the corpus callosum and **extends** through the **cingulated** gyrus into the **hippocampal** gyrus to **end** in the **uncus** (smell center).
- **Function:** It connects the different areas of the **limbic lobe** (related to smell).



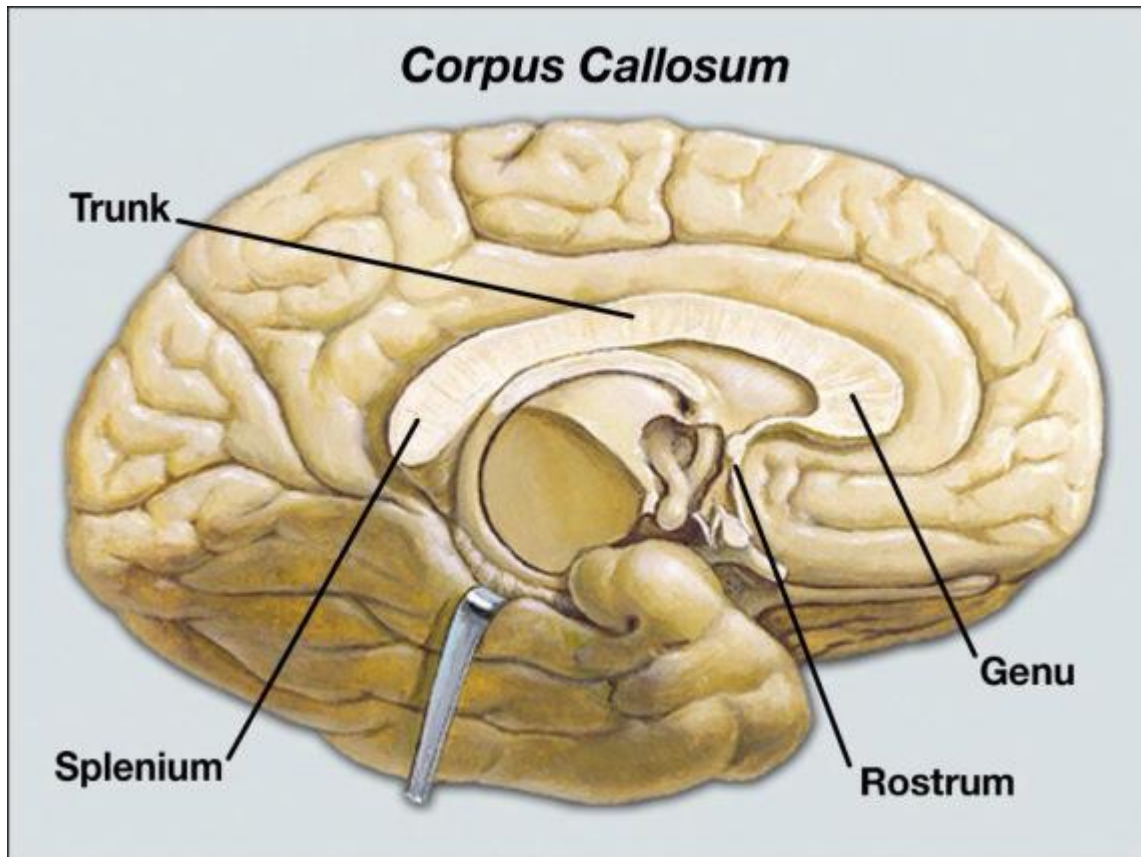
**II) Commissural fibers:**

- Commissural fibers in the cerebral hemispheres are bands of white matter **connecting the same cortical areas on both sides.**
- These fibers arise from the cell bodies of the cerebral cortex of one hemisphere, **cross the middle line** and are distributed to the similar area of the opposite hemisphere.

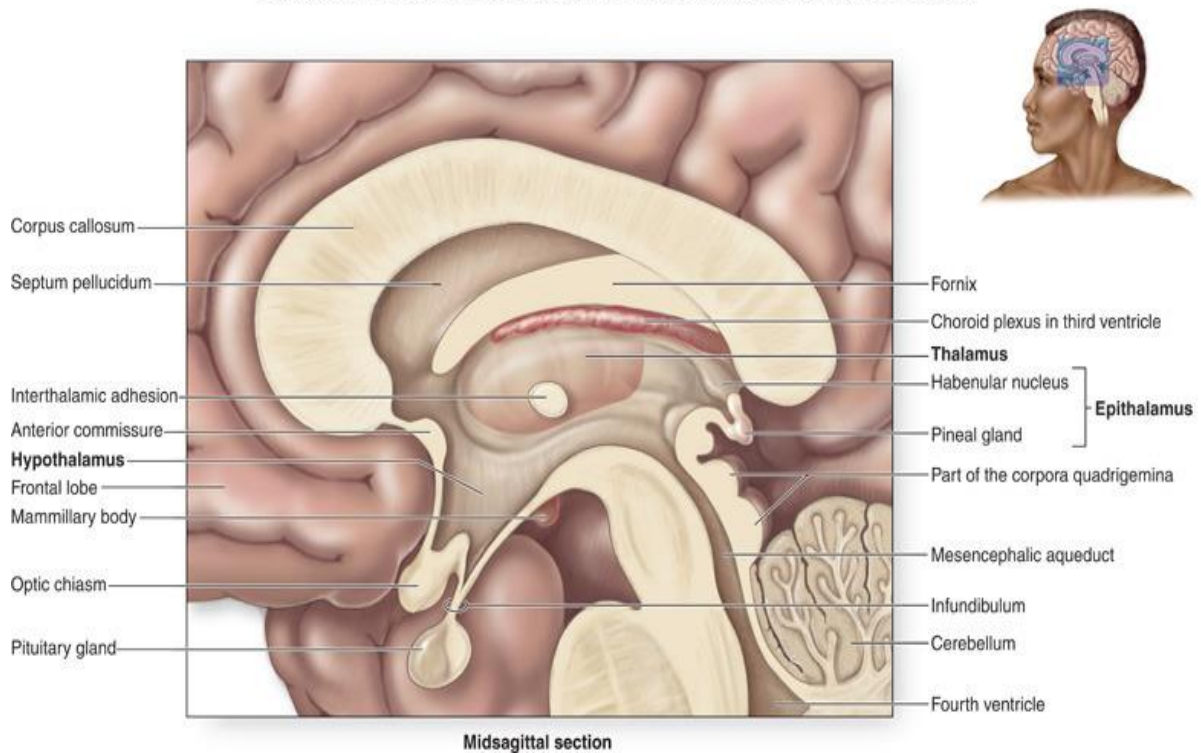
- **Function: co-ordinate the activities of both hemispheres.**
- **There are 5 major commissures:** By which the two cerebral hemispheres are connected across the middle line; these are:
  - 1) The corpus callosum.**
  - 2) The anterior commissure.**
  - 3) The posterior commissure.**
  - 4) Habenular commissure.**
  - 5) The hippocampal commissure.**

### 1) The Corpus Callosum:

- It is **C-shape** and **10 cm** long.
- It is the **largest** commissure which contains fibers that **connect nearly all areas** of the two cerebral hemispheres (**except** the **anterior** part of **temporal** lobes which are connected by the **anterior commissure**).
- It lies at the bottom of the **median longitudinal cerebral fissure** related to lower border of the **falx cerebri** and **inferior sagittal sinus**.
- It is placed **nearer to the anterior** (frontal) than to the posterior (occipital) pole of the cerebral hemisphere.
- It **consists of: rostrum** (lower part), **genu** (anterior part), **body** (middle part) and **splenium** (posterior part):
  - a) Rostrum:**
    - It is the most **lower part** of corpus callosum.
    - It is tapering downwards where it is **connected** to the **optic chiasma** by a thin sheet of gray matter termed the **lamina terminalis**.



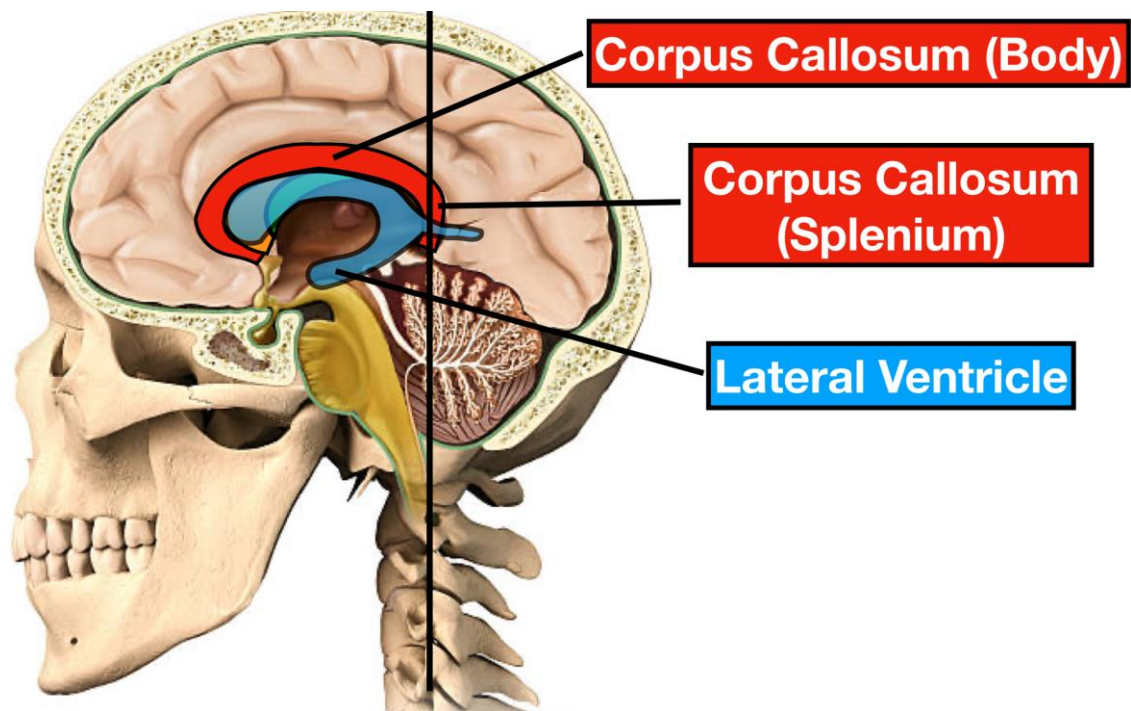
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- Its **lower surface** is **covered by induseum griseum** which is a thin layer of gray matter which extends backwards on the upper surface the genu, body and splenium.
- Its **upper surface** is attached to the **septum pellucidum** and forms the floor of the anterior horn of the **lateral ventricle** on each side.
- The fibers passing through the rostrum connect the **orbital surfaces** of the two frontal lobes.



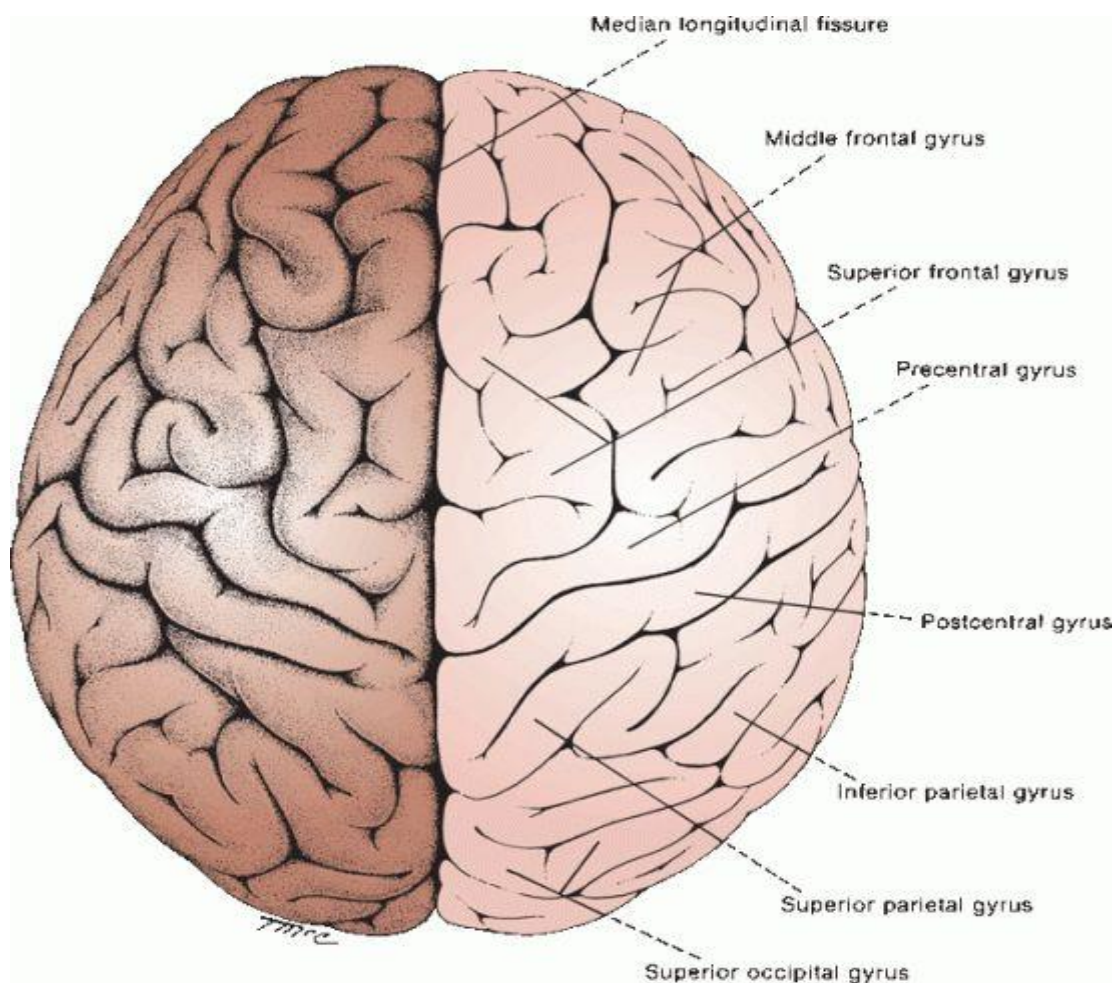
**b) The genu:**

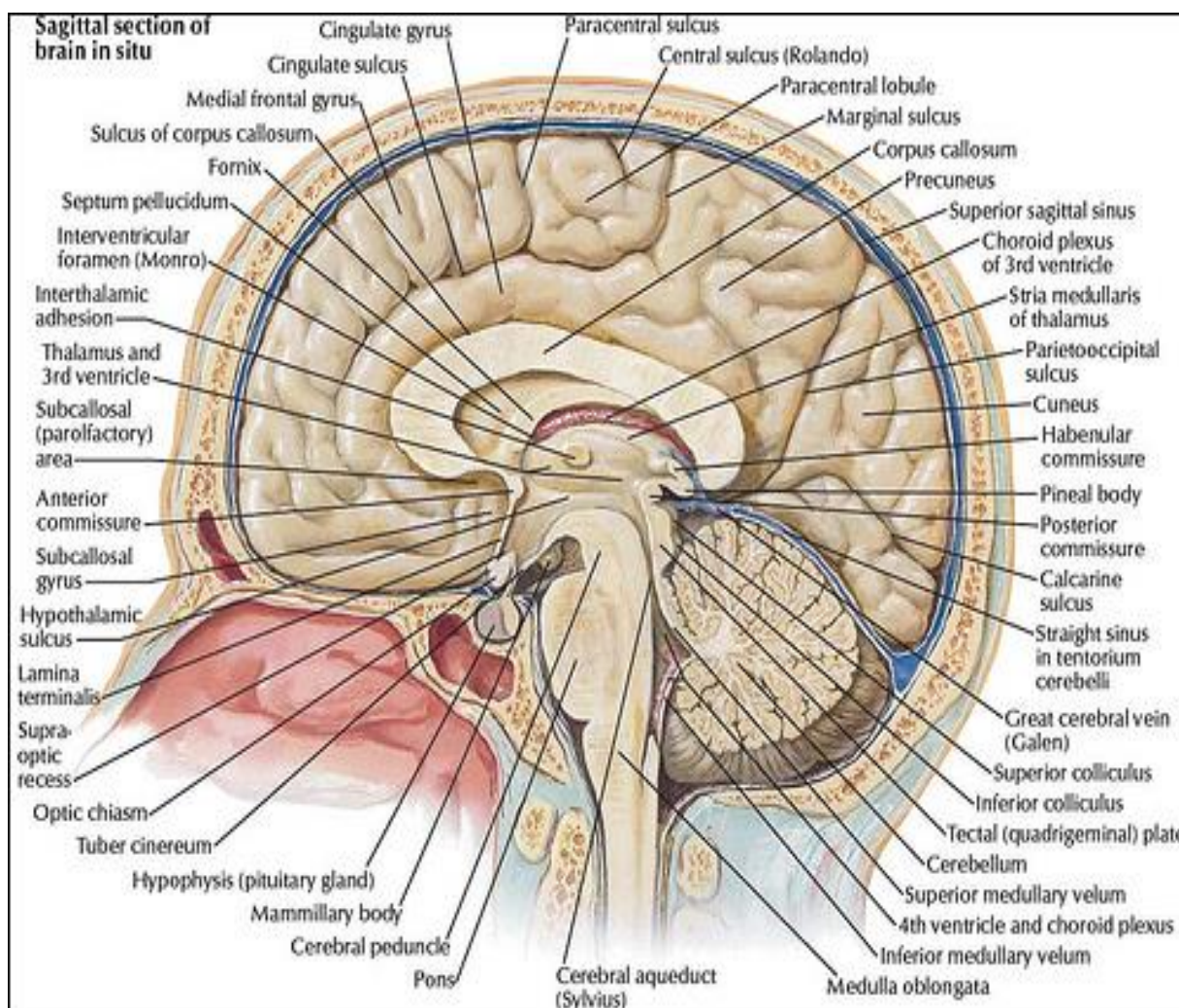
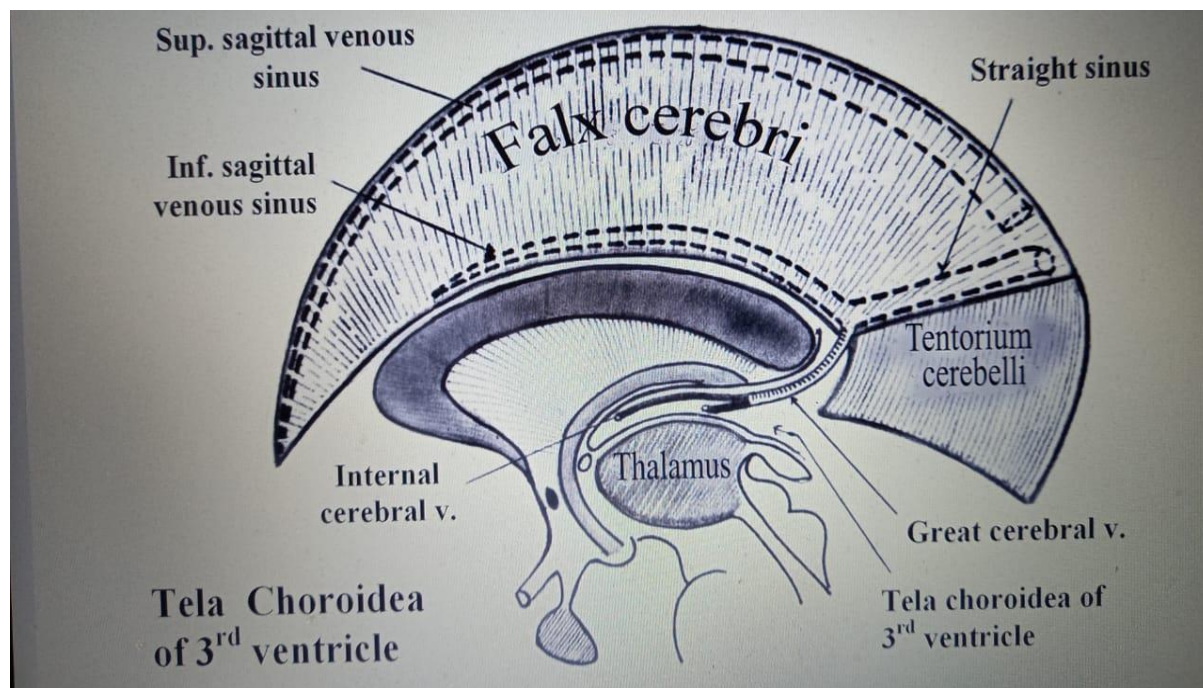
- It is the **most anterior** part of the corpus callosum.
- The fibers passing through the genu curve forwards into the frontal lobe forming an arch called the **forceps anterior (minor)**, which connects the **prefrontal** region on either side.
- Its **posterior** aspect gives attachment to the **septum pellucidum** in the **median plane**, and on **each side** forms the **anterior limit of the anterior horn** of the lateral ventricle.
- Its **anterior** aspect is related to **anterior cerebral artery**.

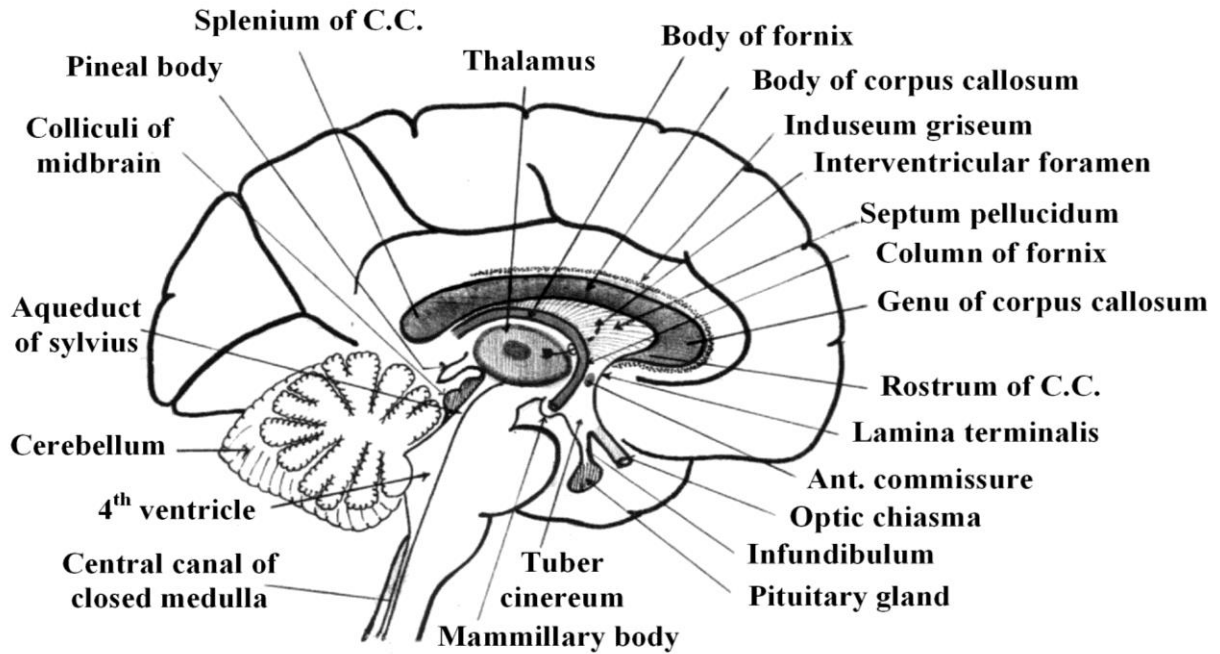
**c) The body:**

- It **extends** from the genu to the splenium.
- Its fibers pass **transversely** to **connect** the 2 parietal lobes and the posterior part of the frontal lobe together.
- **The lower surface** of the body is related to:

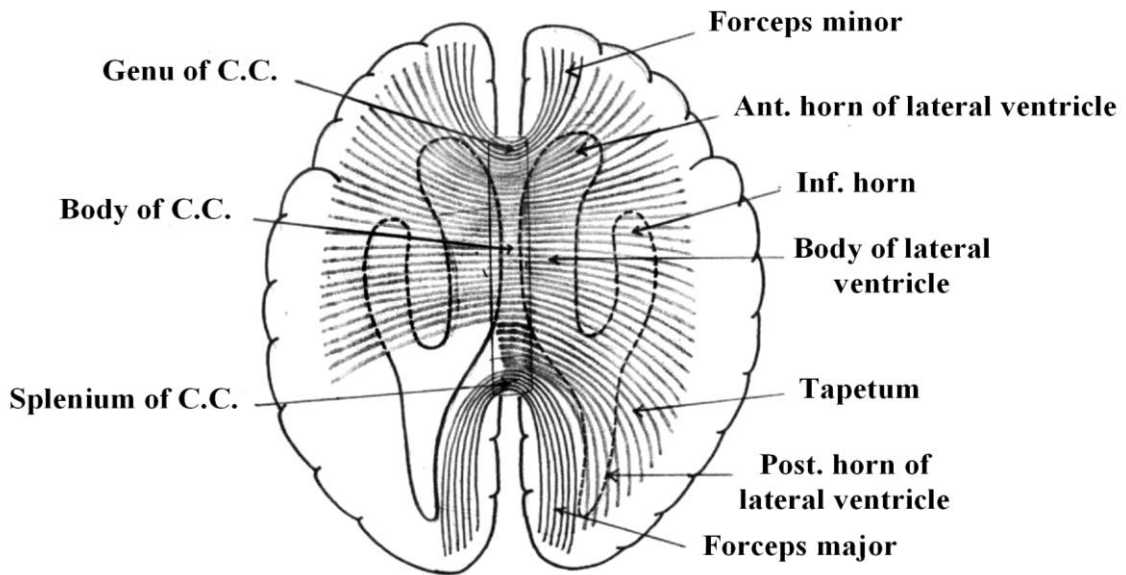
- In the **median plane**, it gives attachment to the **septum pellucidum in front**, and it is closely related to the body of the **fornix behind**.
- **On each side** of the median plane the lower surface of the body forms the **roof of the anterior horn and central part of the lateral ventricle**.
- **The upper surface** of the body is related to the floor of longitudinal cerebral fissure, lower border of falx cerebri, inferior sagittal sinus, anterior cerebral artery and indusium griseum.



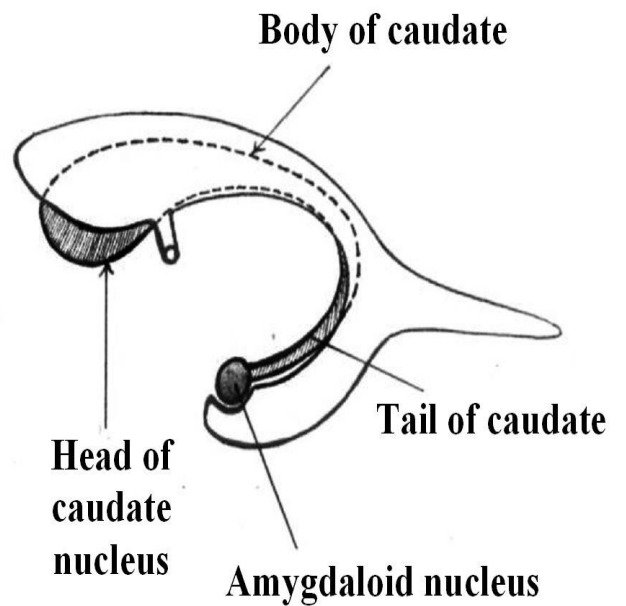
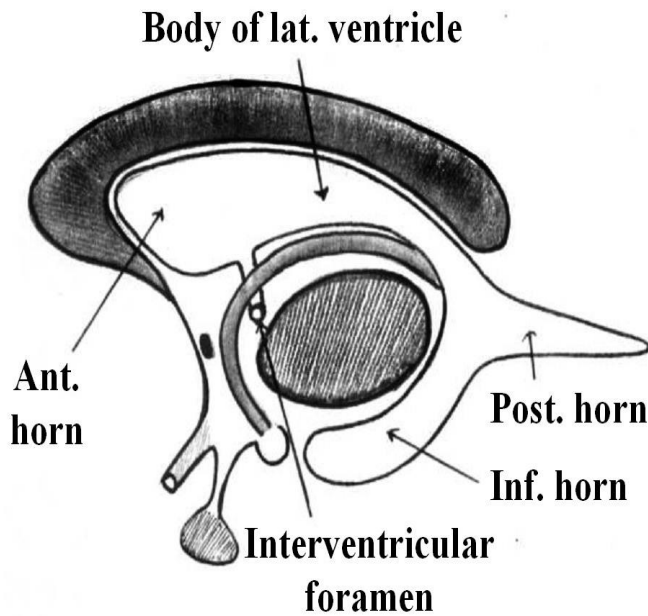
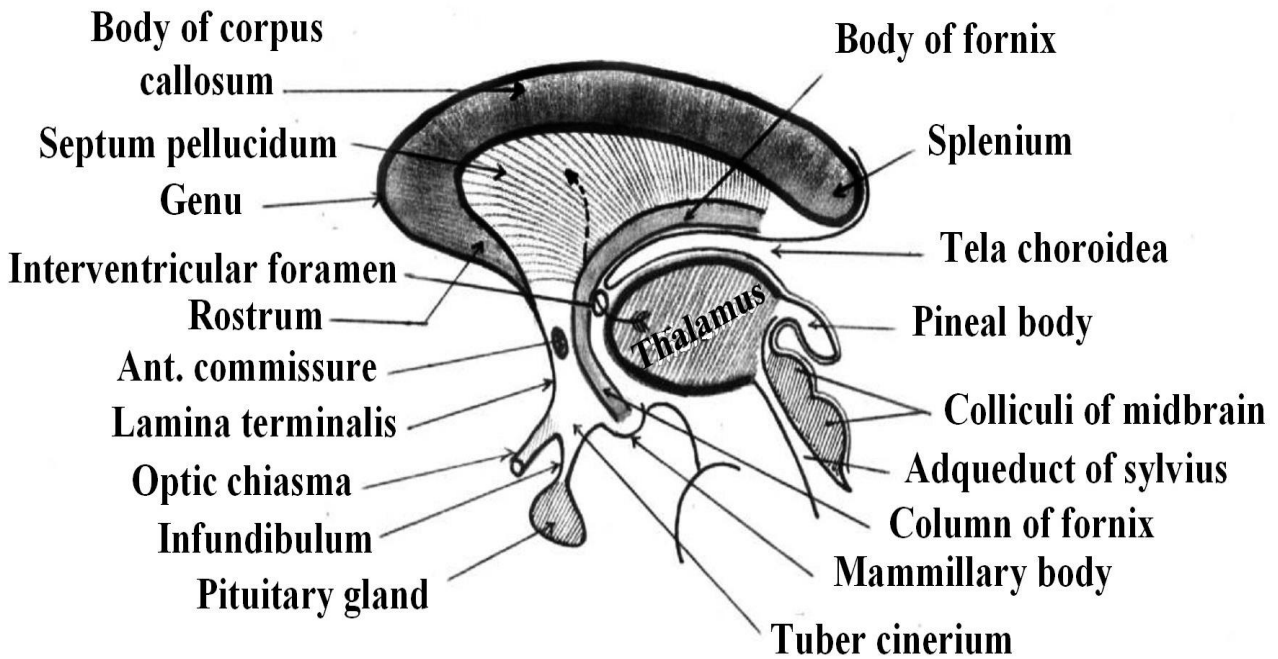




**Sagittal Section**



***Transverse Section at the Level of  
Corpus Callosum***

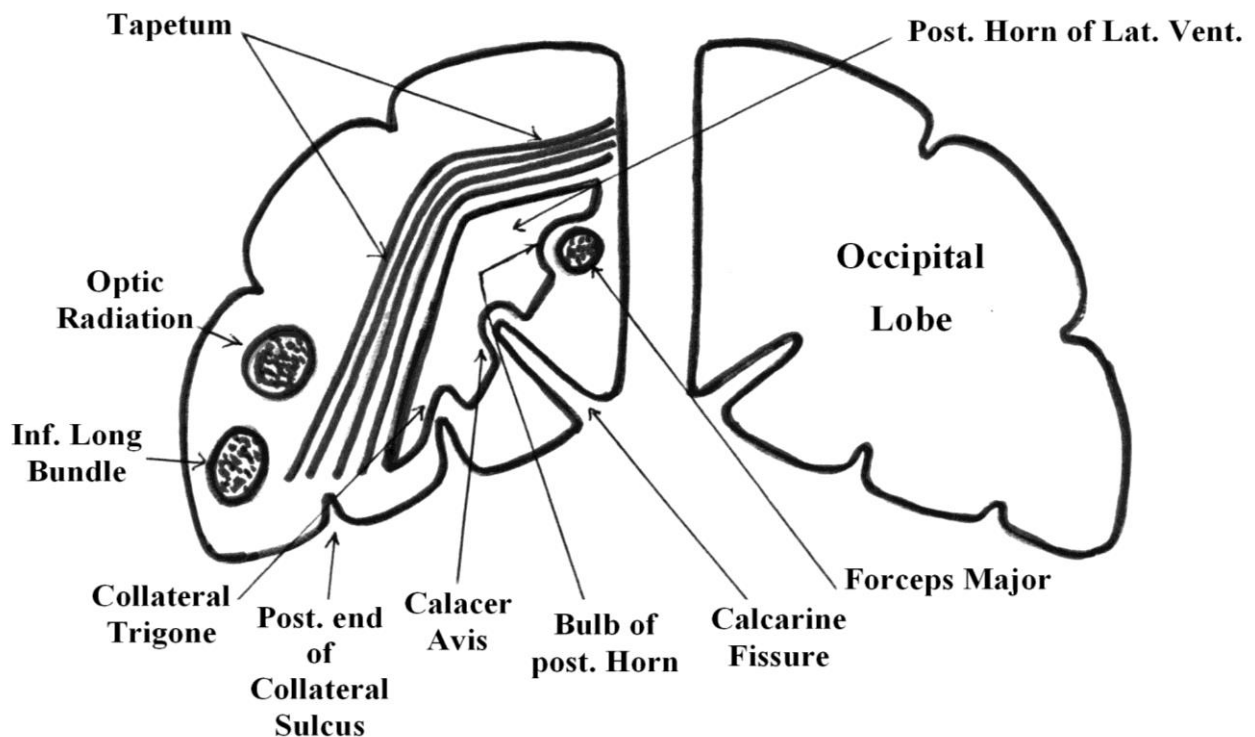
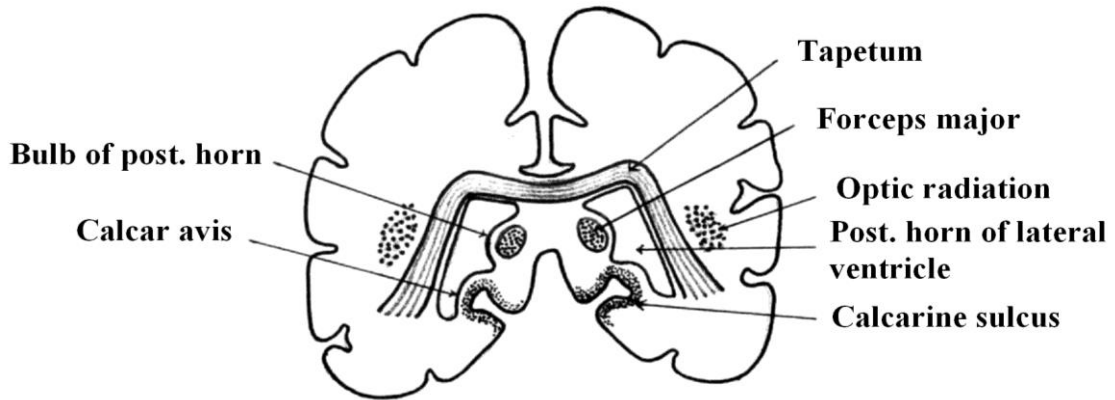


**Lateral Ventricle**

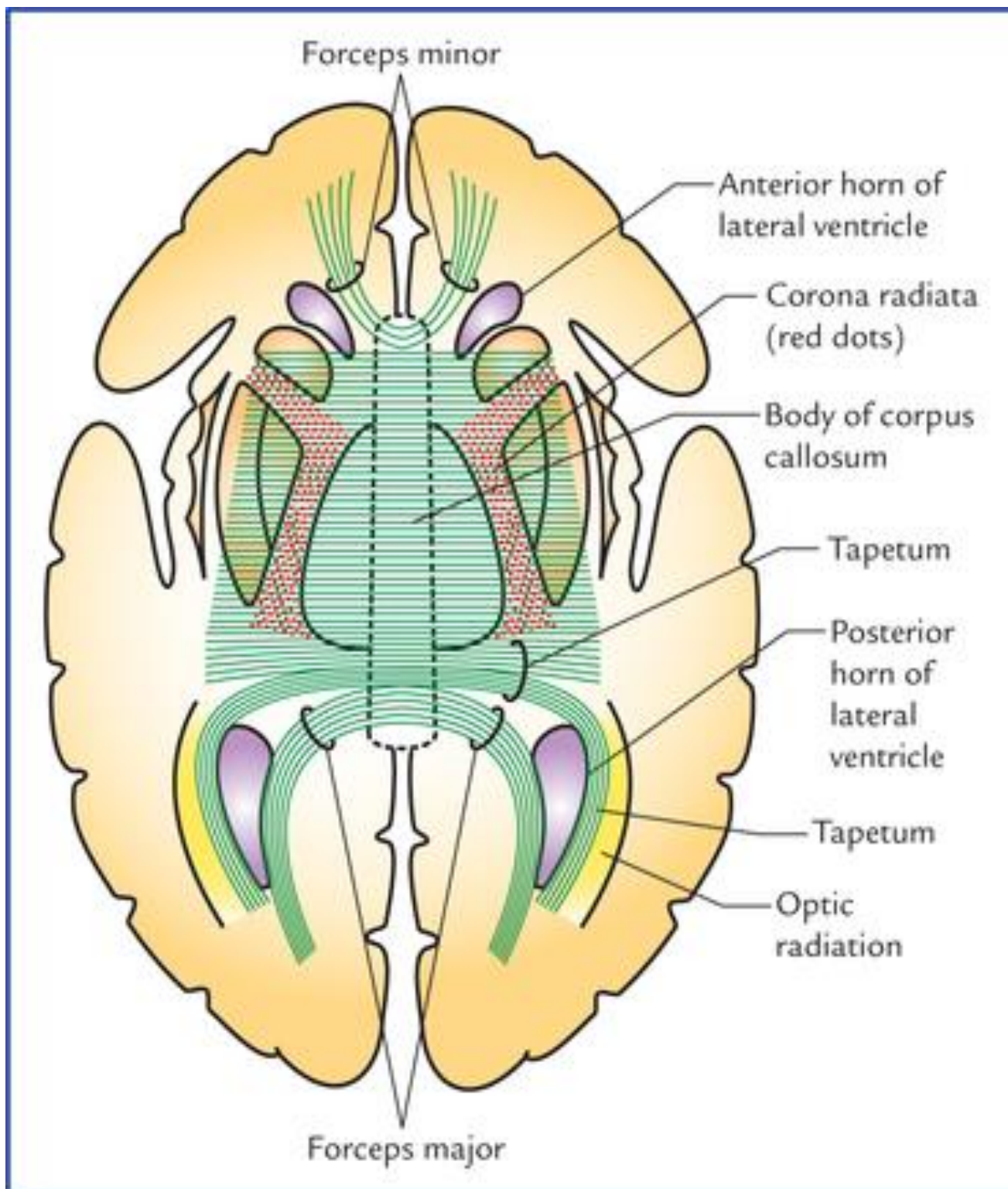
**d) The splenium:**

- It is the **most posterior** part of corpus callosum.
  - The fibers of the splenium curve backwards into the occipital lobe forming an arch called the **forceps posterior (or major)**.
  - These fibers cause a **bulging into** the medial wall of the posterior horn of the lateral ventricle, which is termed the **bulb of the posterior horn**.
  - Some of the fibers of the splenium and the posterior part of the body form the **tapetum** which constitute the **roof and the lateral wall of the posterior horn** of the lateral ventricle as they pass laterally **then downwards** into the occipital and the temporal lobes.
  - The splenium of corpus callosum is related to the following:
    - **Above:** (as relations of the body of corpus callosum).
    - **Below:** 2 crura of the **fornix**, 2 **thalami**, **great cerebral veins** receiving 2 internal cerebral veins. **tela choroidea** of 3<sup>rd</sup> ventricle enters the **transverse cerebral fissure**, **pineal body** and **tectum** of midbrain (**4 colliculi**).
- ★ **Function of corpus callosum:** It ensures that both cerebral hemispheres can **communicate, coordinate and send signals to each other**.

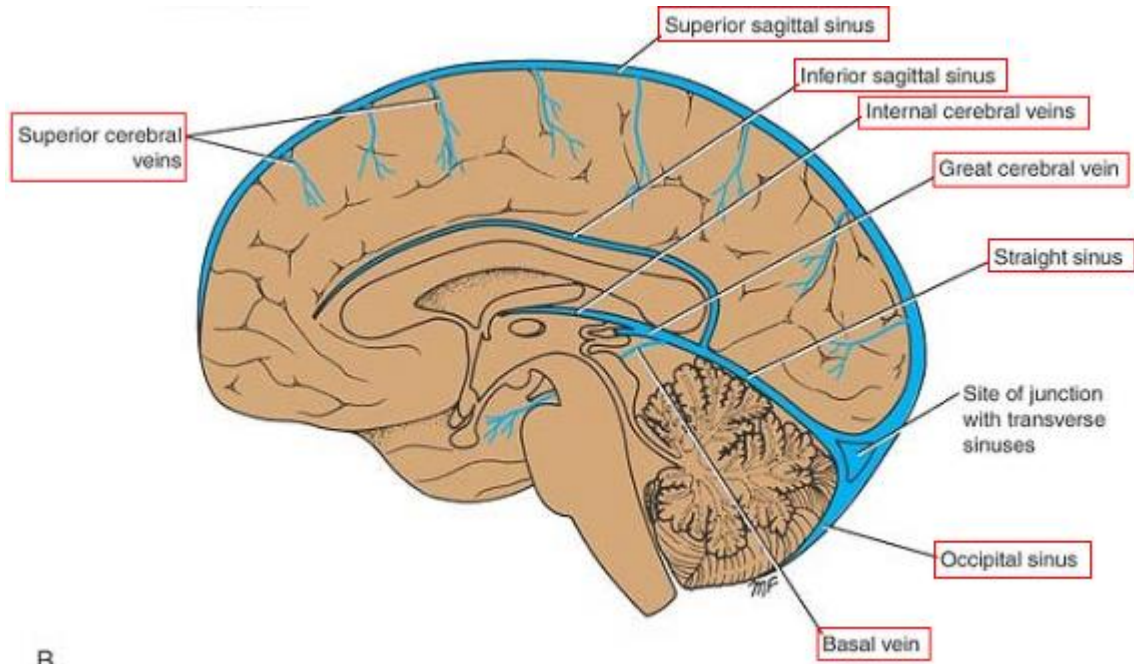
**Coronal Section, Boundaries & Relations of Post. Horn of Lat. Ventricle**



**Posterior Horn of Lateral Ventricle  
Coronal Section**







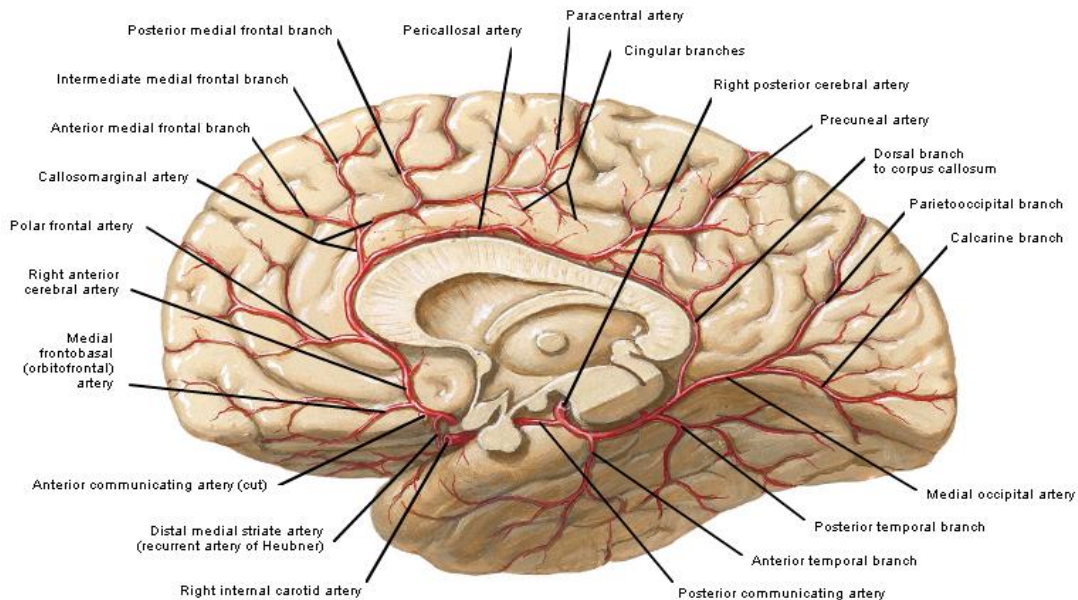
★ **Lesion of corpus callosum:**

- It leads to **corpus callosum syndrome (split brain)** which consists of the following neurological sign in the left side only:
  - 1- **Callosal motor apraxia** (impaired of voluntary movements inspite of absence of paralysis).
  - 3- **Astereognosis**

★ **Blood supply of corpus callosum:**

- **All corpus callosum** is supplied by the **anterior cerebral artery** except the **splenium** which is supplied by the **posterior cerebral artery**.

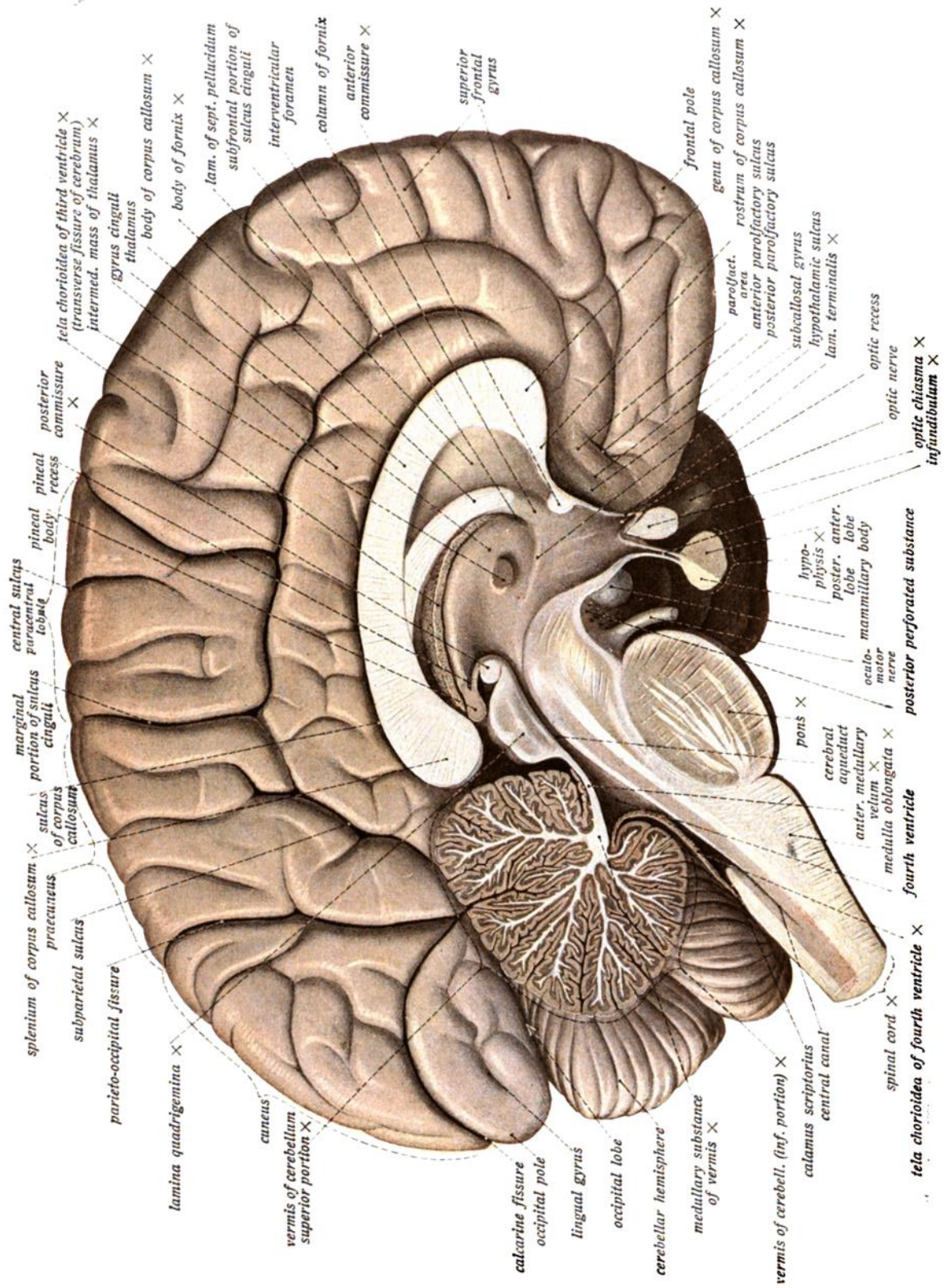
### Arteries of Brain Medial View



*F. Netter M.D.*  
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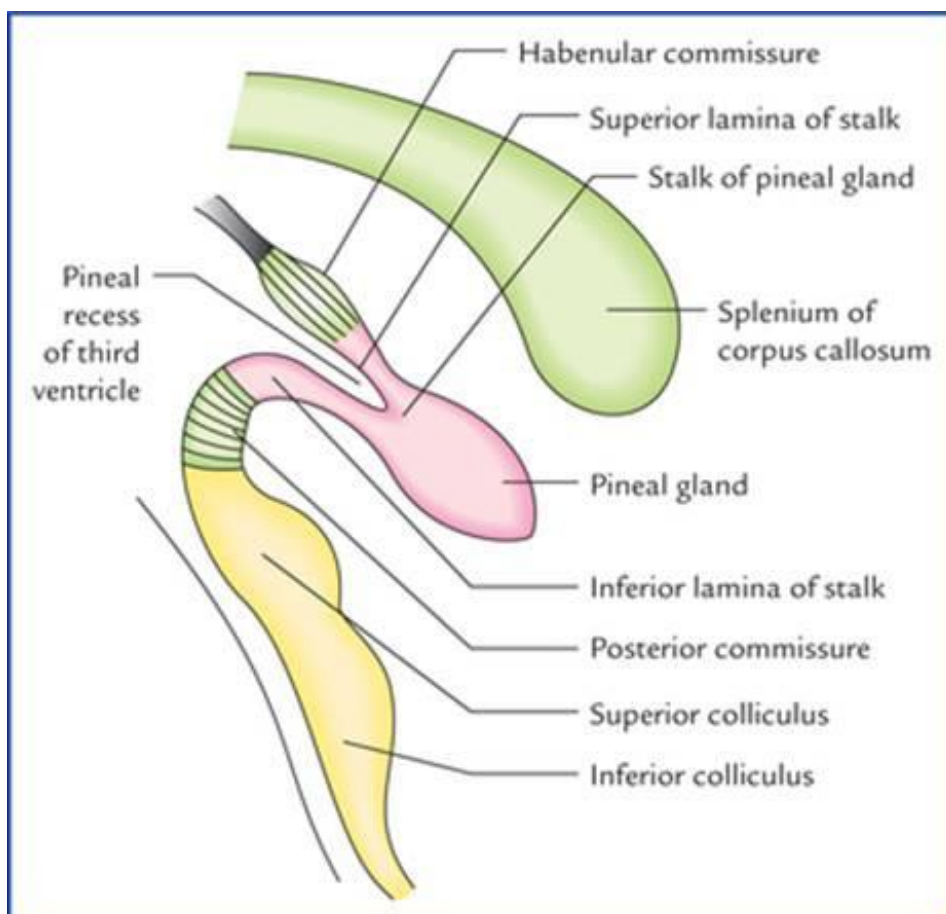
## 2) The Anterior Commissure:

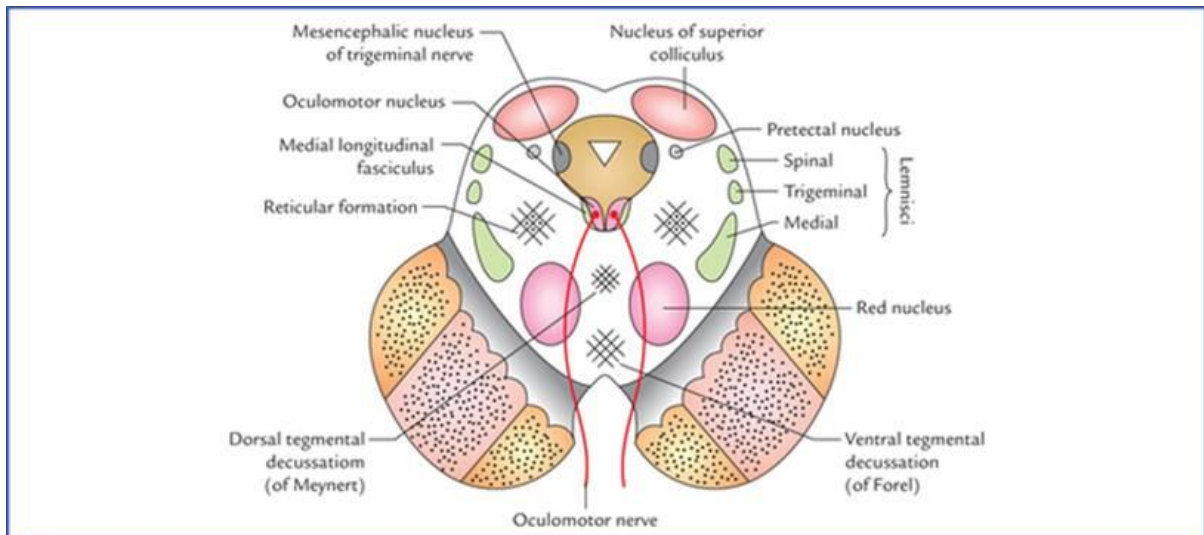
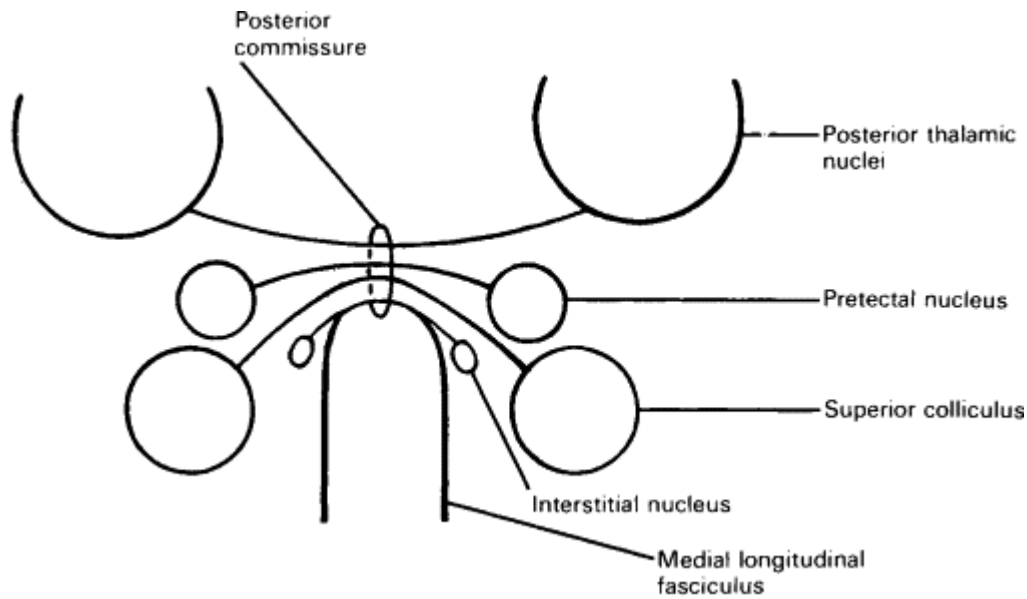
- It is a small bundle of fibers which run **transversely** between the 2 cerebral hemispheres, just **anterior to the columns of the fornix**.
- It is **embedded** in the upper part of the **lamina terminalis** forming a part of the **anterior wall** of the **3rd ventricle**
- **Functions:** It **connects** the following **olfactory structures** of both sides together:
  - Olfactory bulbs.
  - Anterior perforated substances.
  - Temporal lobes
  - Amygdaloid bodies.



### 3) Posterior commissure:

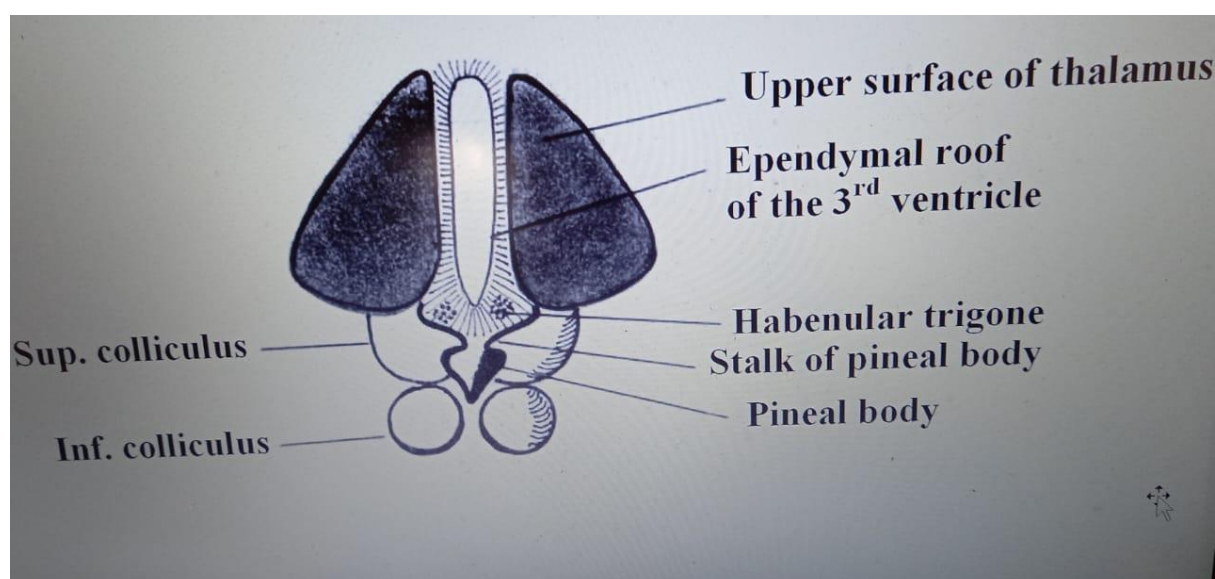
- It is a part of **epithalamus** in the posterior wall of **3<sup>rd</sup>. ventricle**.
- It is band of fibers which cross the median plane in the **lower lamina** of the **stalk** of the **pineal body**, just **above** the upper end of the **cerebral aqueduct**.
- It **connects** the right and left **superior colliculi**, **oculomotor nuclei** **medial longitudinal bundles** and the **pretectal** nuclei.
- **Functions:** It is concerned with **pupillary light reflex** and **conjugate eye movements** control.





#### 4) Habenular commissure:

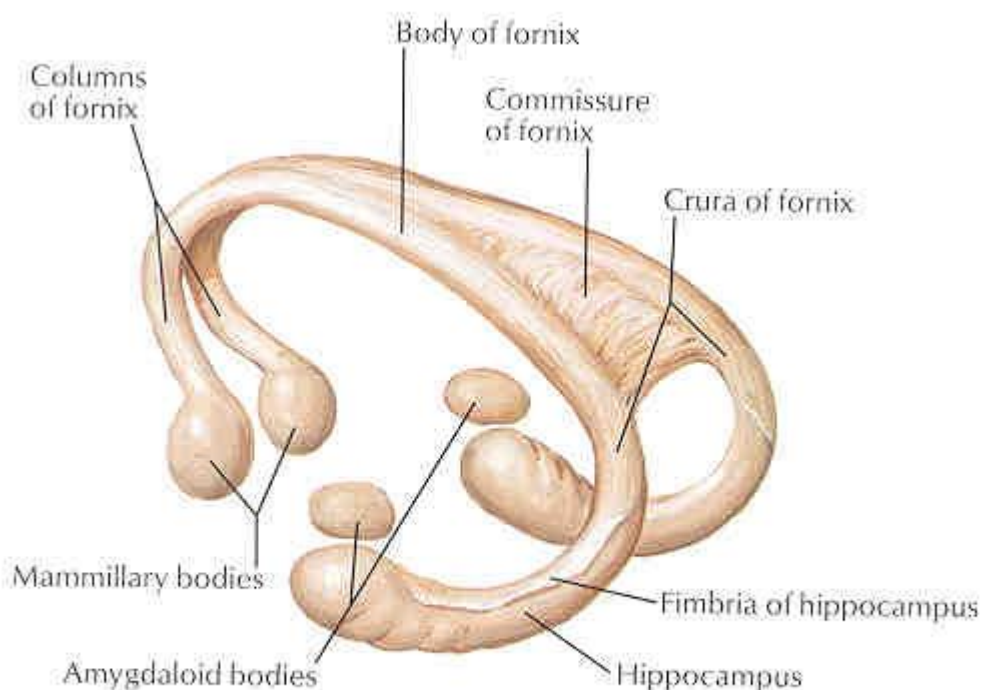
- It is a part of epithalamus in the posterior wall of 3<sup>rd</sup>. ventricle.
  - These are fibers derived from the stria habenularis (stria medullaris thalami) which cross the median plane in the upper lamina of the stalk of the pineal body, just above the pineal recess and the posterior commissure.
  - The fibers of this commissure are derived from the fornix, habenular nuclei, amygdaloid body and anterior perforated substance.



- **Function:** It is a part of **reflex olfactory pathway** controlling salivation and secretory activity of gastric and and intestinal glands.

### 5) The Hippocampal Commissure:

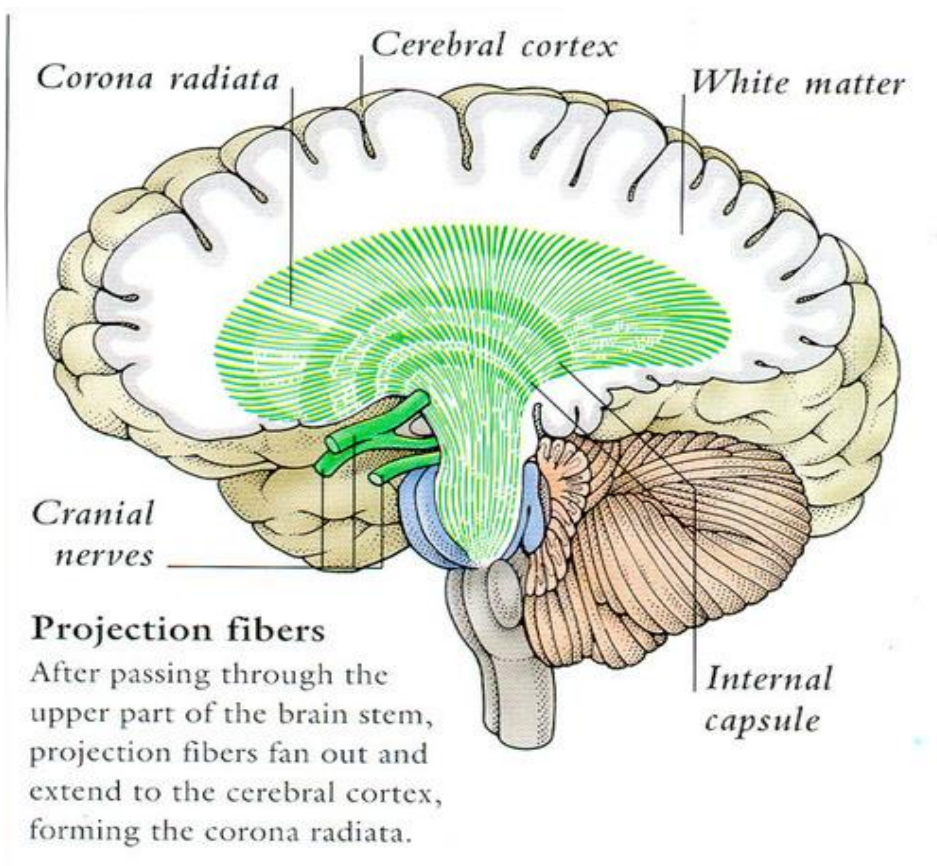
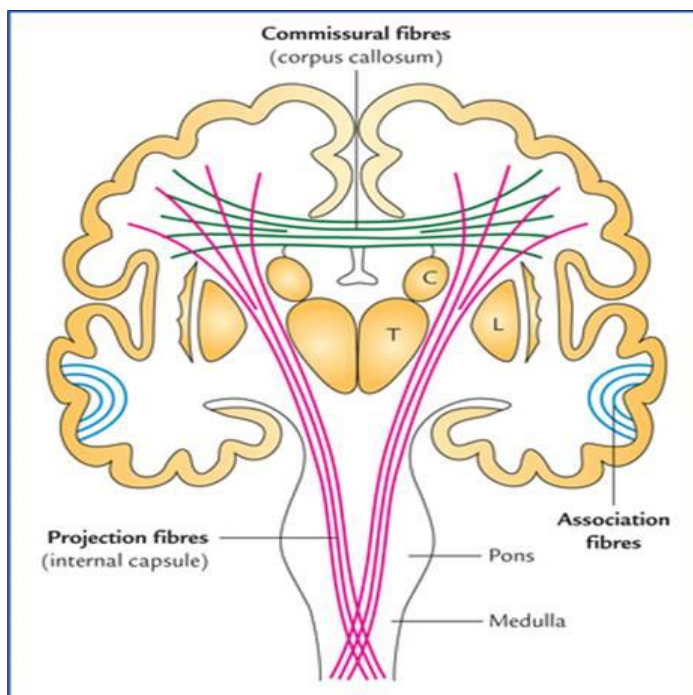
- Just below the splenium of corpus callosum, the **2 crura** of the fornices of both sides are connected together by the **hippocampal commissure** (commissure of the fornix).
- It connects hippocampi of both sides.



Fornix: schema

**III) Projection fibers:**

- These are fibers connecting high **cortical centers** with the lower **subcortical centers**.



- These fibers passing through the **internal capsule** and **corona radiata**, may be one of the followings:

**A) Projection fibers to the cerebral cortex: (from the thalamus)**

- All impulses to the cerebral cortex must stop first in the thalamus; so the **only** fibers which reach the cortex come from the **thalamus** and are called **thalamo-cortical fibers** or the **thalamic radiation**.
- The thalamo-cortical projections (radiation) of **clinical importance** are:
  - 1) Superior thalamic radiation: (Sensory radiation)**
    - From the **PVNT** to the sensory area (**3, 1,2**) in the **postcentral** gyrus, of the parietal lobe.
  - 2) Anterior thalamic radiation:**
    - From **dorsomedial thalamic** nucleus to **prefrontal cortex**
  - 3) Visual (optic) radiation:**
    - From the **lateral geniculate** body to the **visual area (17)** in the occipital cortex.
  - 4) Auditory radiation:**
    - From the **medial geniculate** body to the auditory area (**41 and 42**) in the temporal lobe.

**B) Projection fibers from the cerebral cortex to the lower centers:**

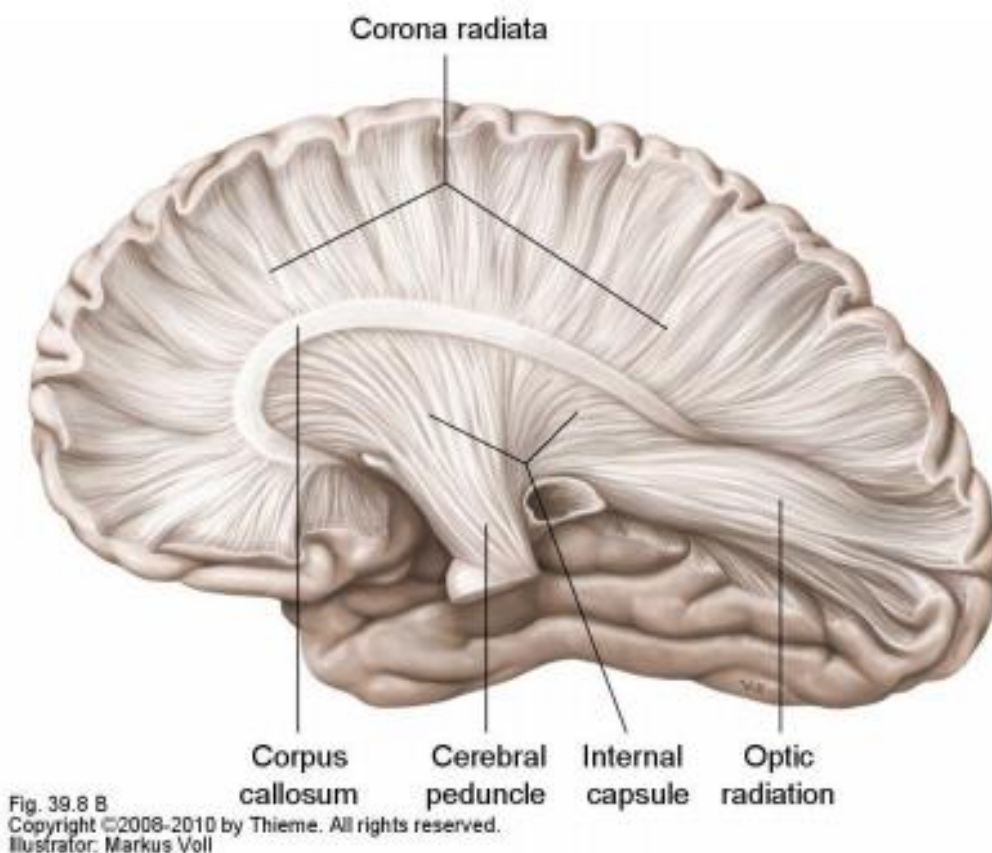
- 1) The pyramidal tract** (cortico-spinal and corticobulbar fibers).
- 2) Cortico-pontine fibers:**
  - Fronto-pontine fibers.
  - Temporo-parieto-occipito-pontine fibers.



- 3) Many **extrapyramidal** fibers to many extra-pyramidal centers.
- 3) **Cortico-thalamic fibers** to the **different nuclei** of the thalamus.

## Corona Radiata

- ★ It is a mass of the projection fibers passing between the internal capsule and the cerebral cortex.
- ★ After these projection fibers pass through the internal capsule, they radiate towards the different areas of cerebral cortex to reach all lobes of the cerebral hemisphere.



## Basal Nuclei

★ **Definition:** The basal nuclei (ganglia) are **masses of gray matter** deeply placed **inside the white matter** of cerebral hemisphere, near the **inferior surface** of the cerebral hemispheres.

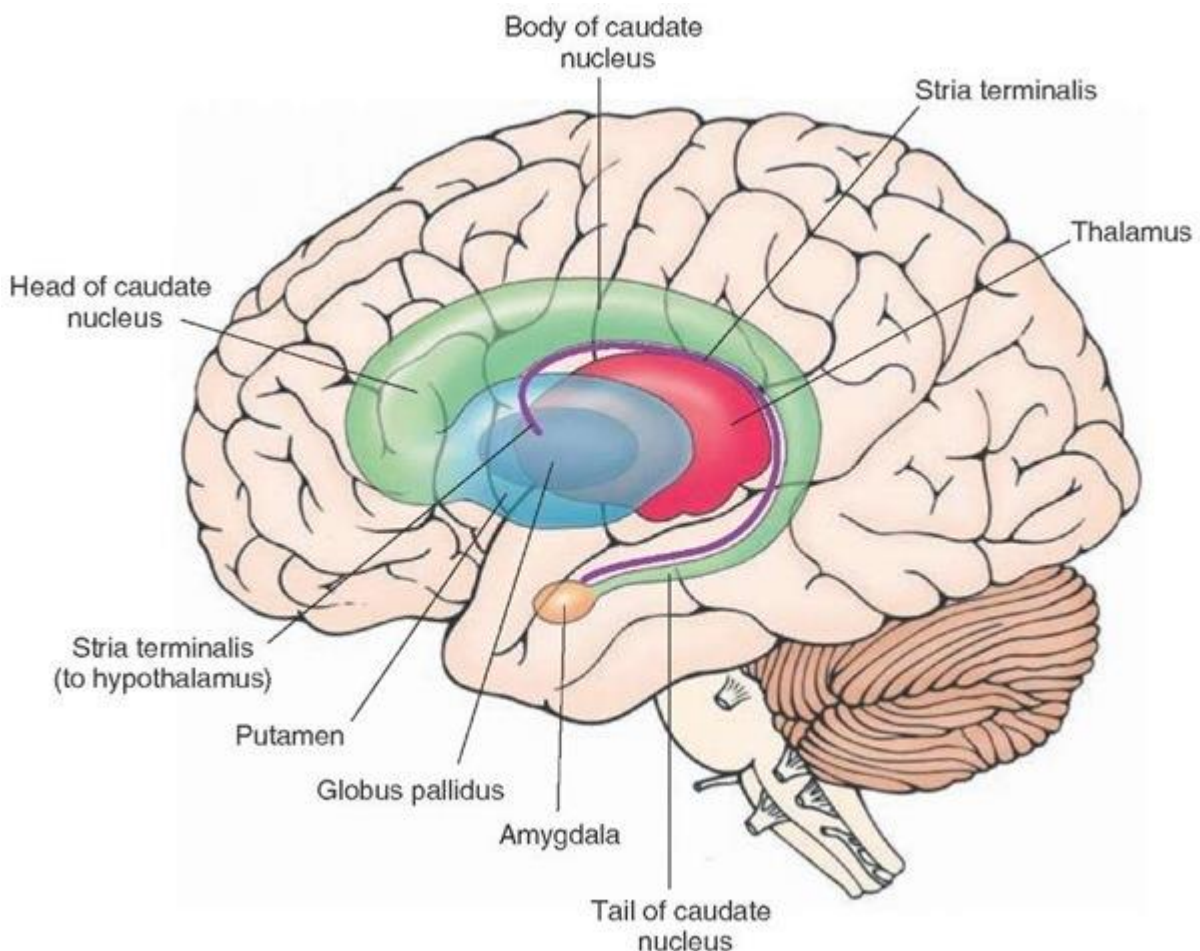
➤ The **projection fibers pass in between** these nuclei.

★ **Components:**

**I) Corpus striatum** formed of the **caudate** and the **lentiform** nuclei.

**II) The amygdaloid** nucleus.

**III) The claustrum.**



## I) Corpus striatum

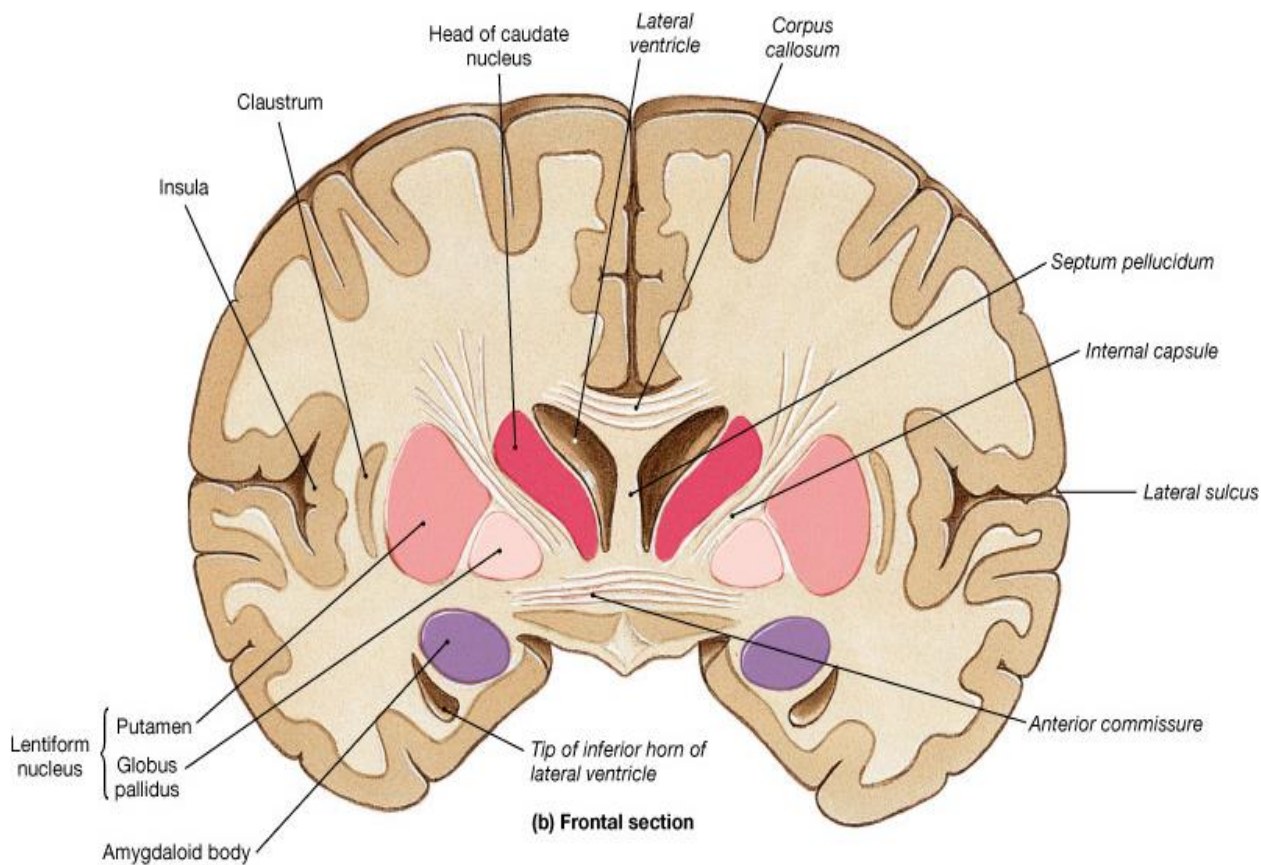
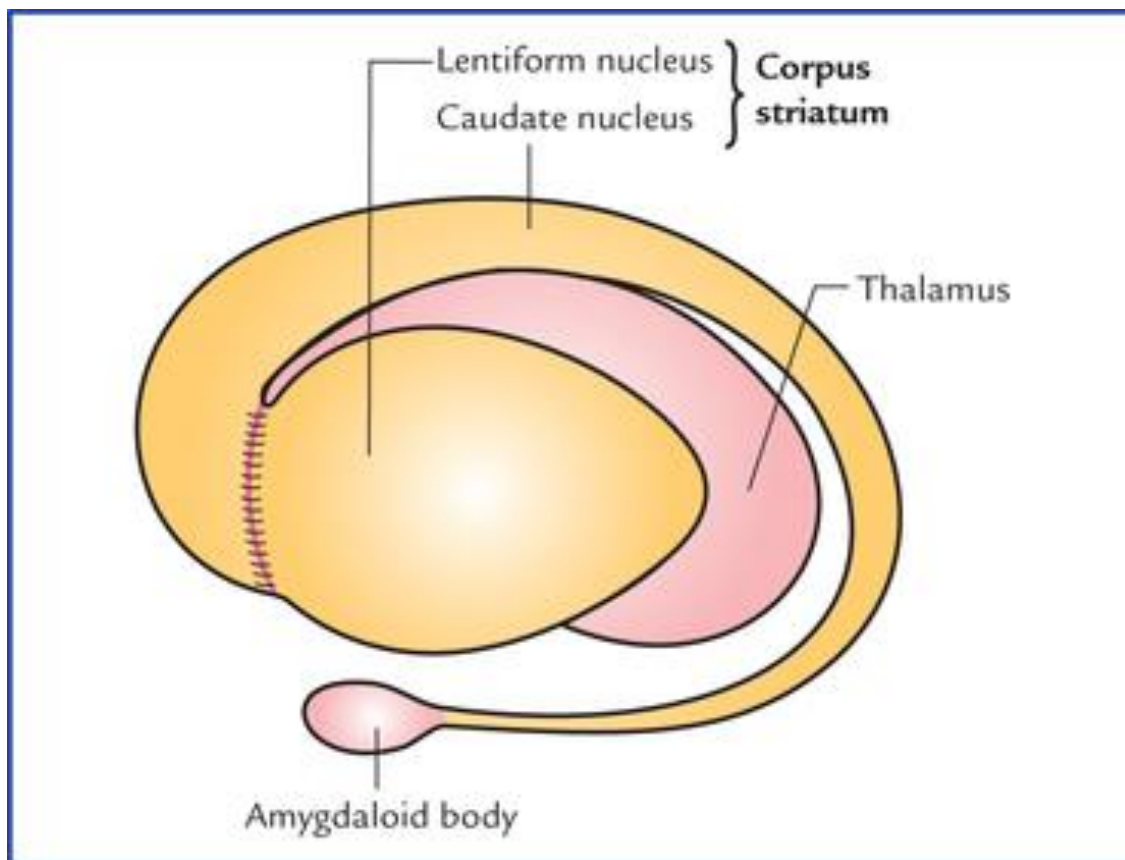
- \* It is situated **anterior & lateral to the thalamus**.
- \* It is almost completely **divided by the internal capsule** into the **caudate** nucleus and the **lentiform** nucleus.
- \* The **lentiform** nucleus is formed of **lateral** part called **globus pallidus** and **medial** part called **putamen**.
- \* The **globus pallidus** is phylogenetically the **oldest** part of the corpus striatum and called **paleostriatum**, while the **putamen** and the caudate nucleus constitute the **neo-striatum**.

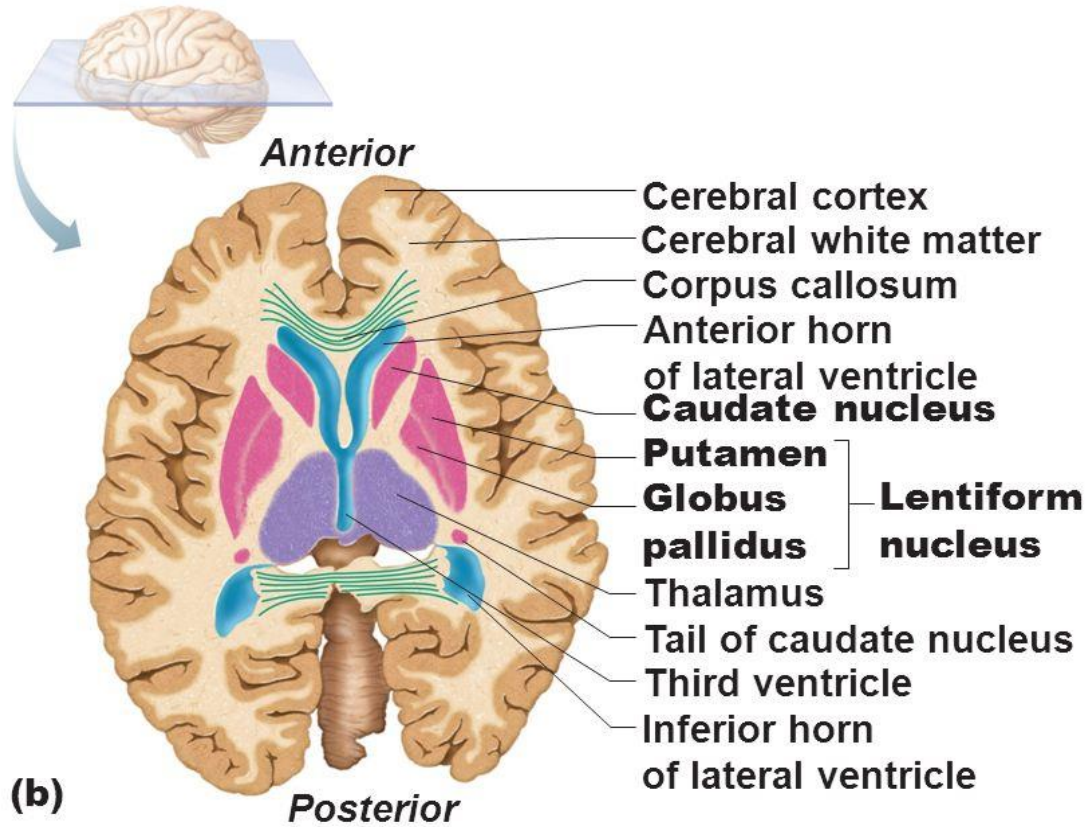
### A) The Caudate Nucleus:

- ★ It is an arched **comma** shaped mass of gray matter.
- ★ It has **head, body and tail**.

#### 1) The head:

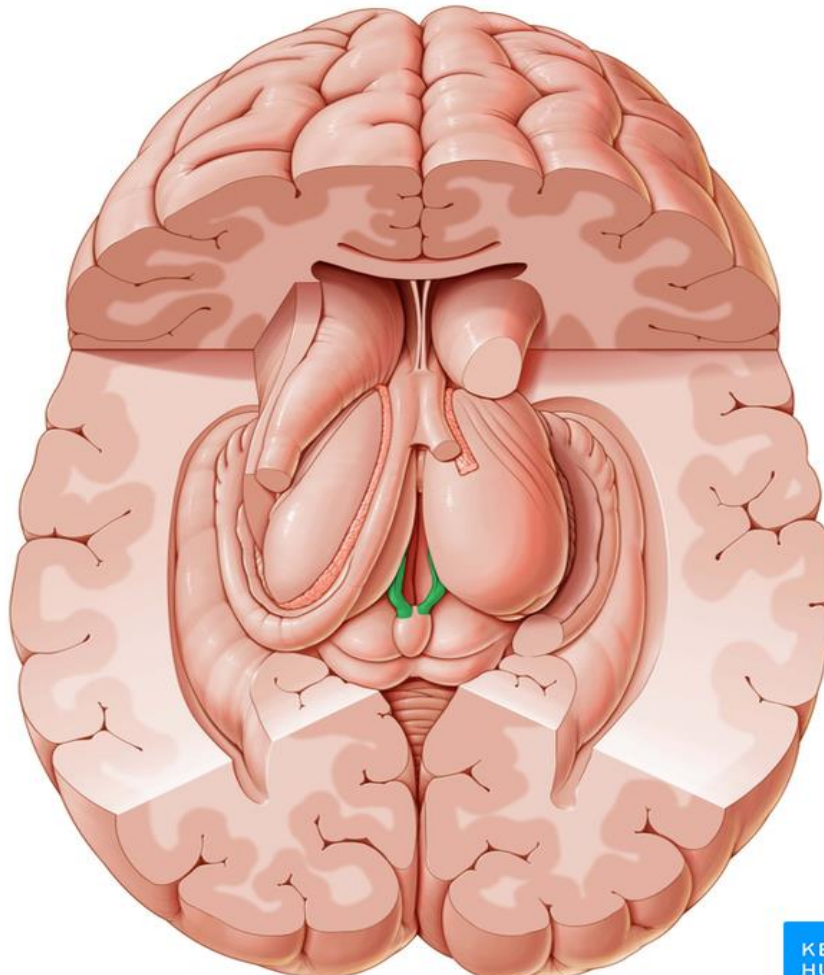
- It is the **large anterior end** of the caudate nucleus.
- It **forms** the sloping **lateral wall and the floor of the anterior horn** of the lateral ventricle.
- **Laterally**, it is **separated from the lentiform** nucleus by the **internal capsule**.
- **Anteriorly**, it is **continuous** with the anterior end of the putamen of the lentiform nucleus.
- **Inferiorly**, it is **continuous** with the gray matter of the **anterior perforated** substance.





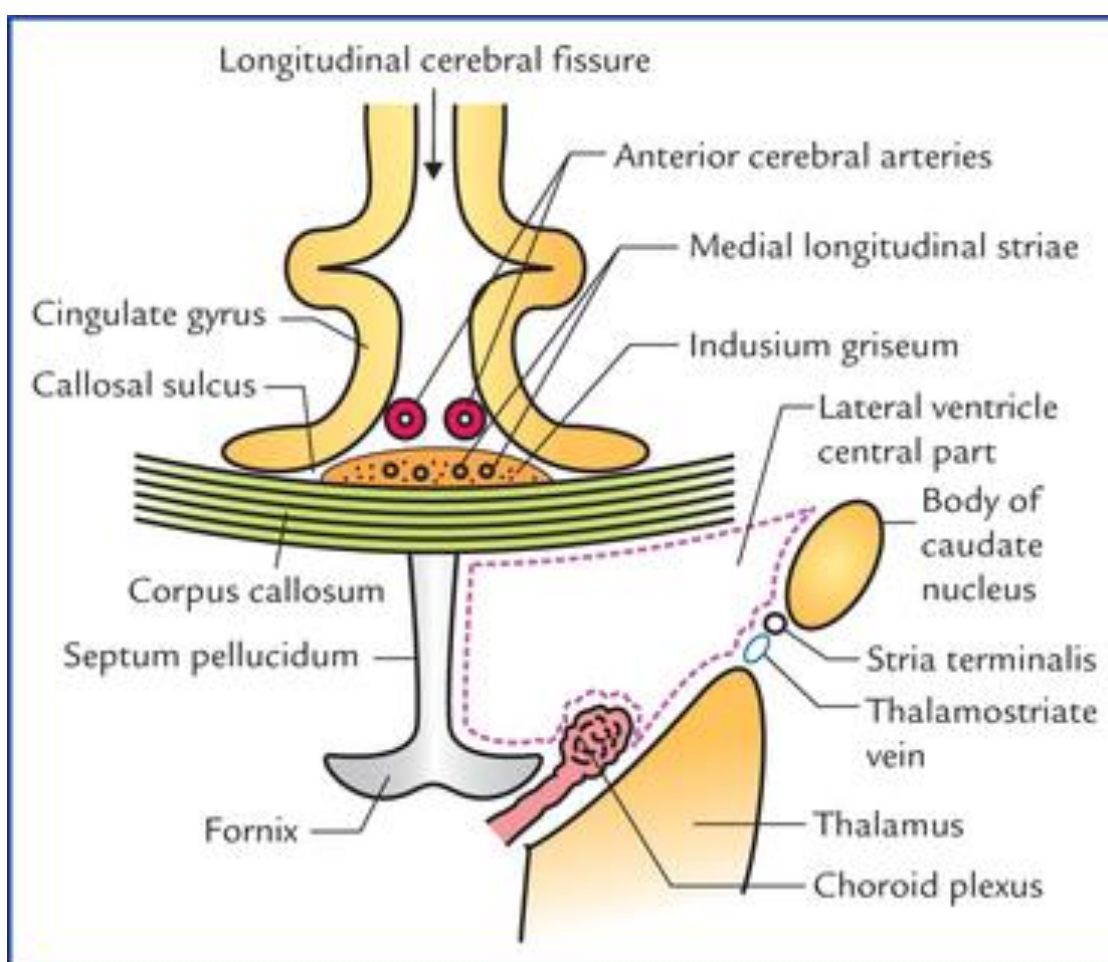
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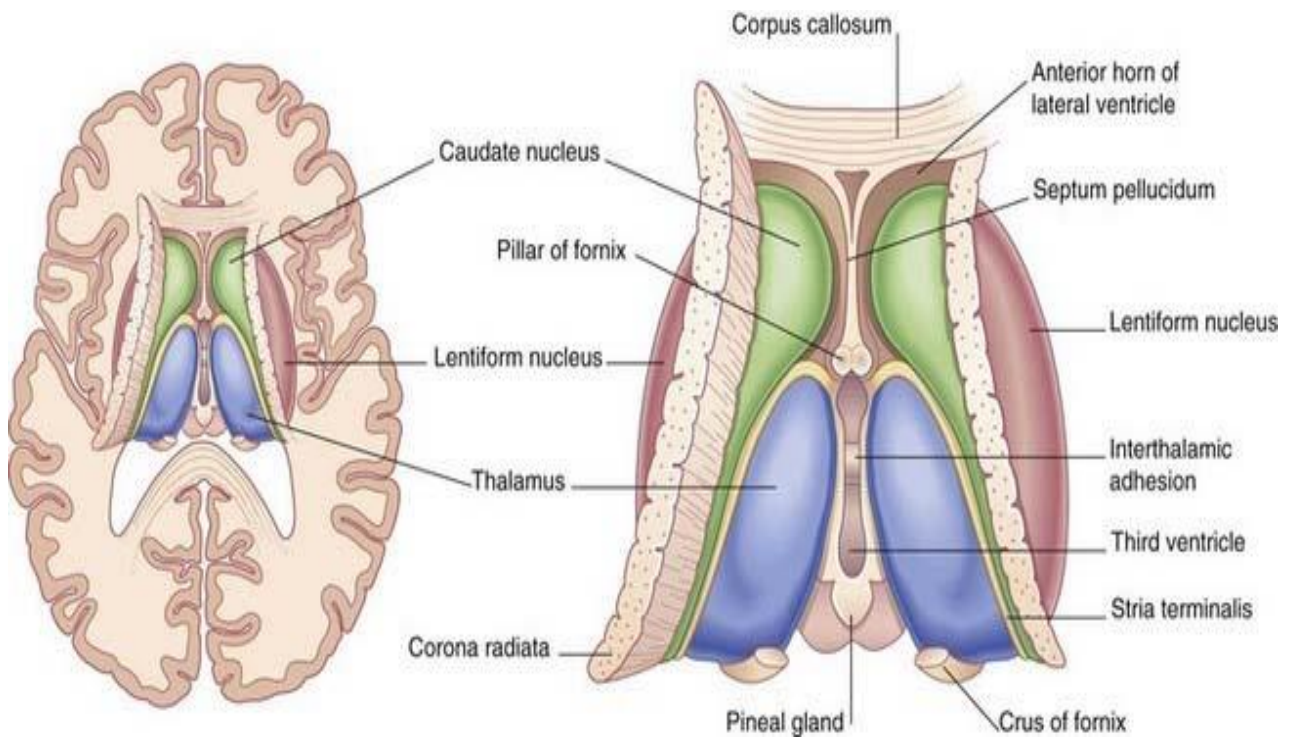
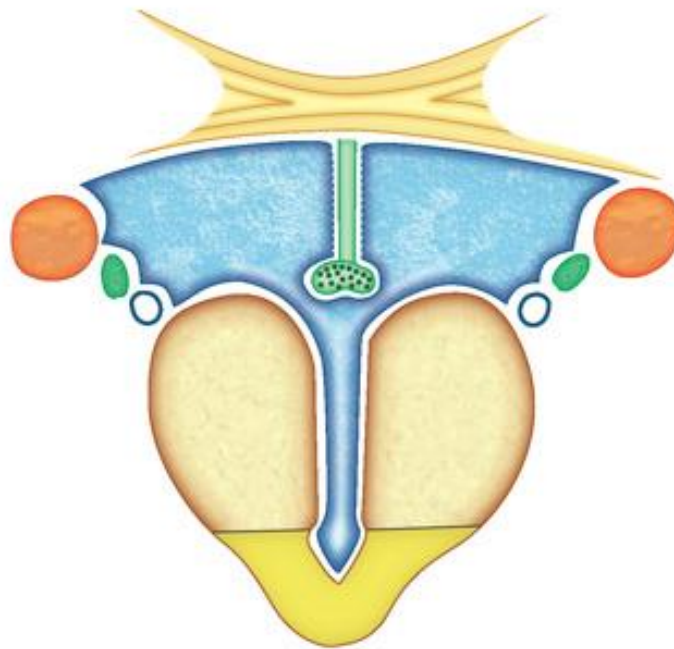
Figure 12.11b (1 of 2)



## 2) The body:

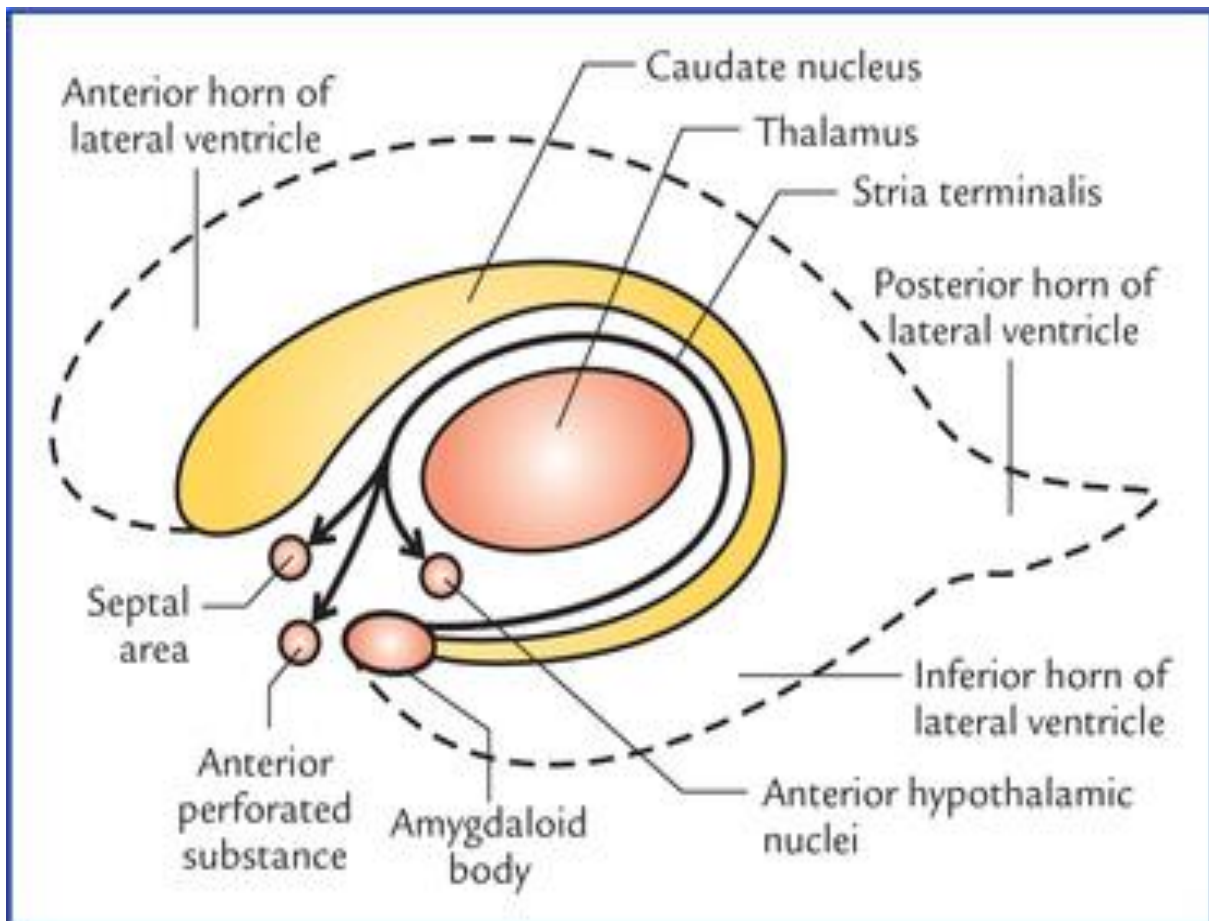
- It is the narrowing part behind the head **arches** upwards and backwards **above and lateral to the thalamus** with **stria terminalis and thalamo-striate vein in between** (all forming part of the sloping **floor & lateral wall** of the body of the lateral ventricle).
- Its **lateral** aspect is related to the **internal capsule**.



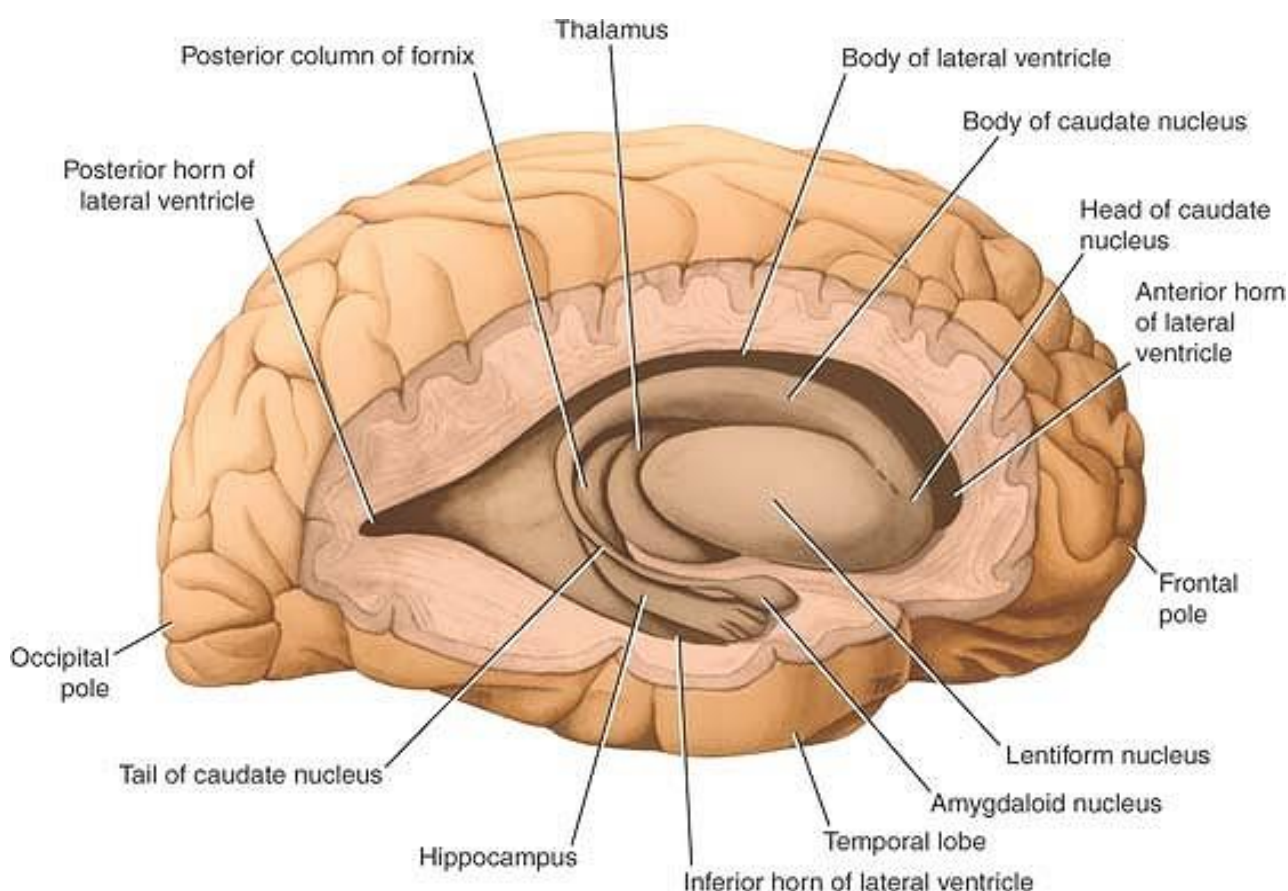


### 3) The tail:

- The body tapers to form a narrow tail which curves **downwards behind the thalamus** and then **forwards** in the **roof of the inferior horn** of the lateral ventricle.
- It terminates in the **amygdaloid nucleus** in the most anterior part of the **roof** of the inferior horn.







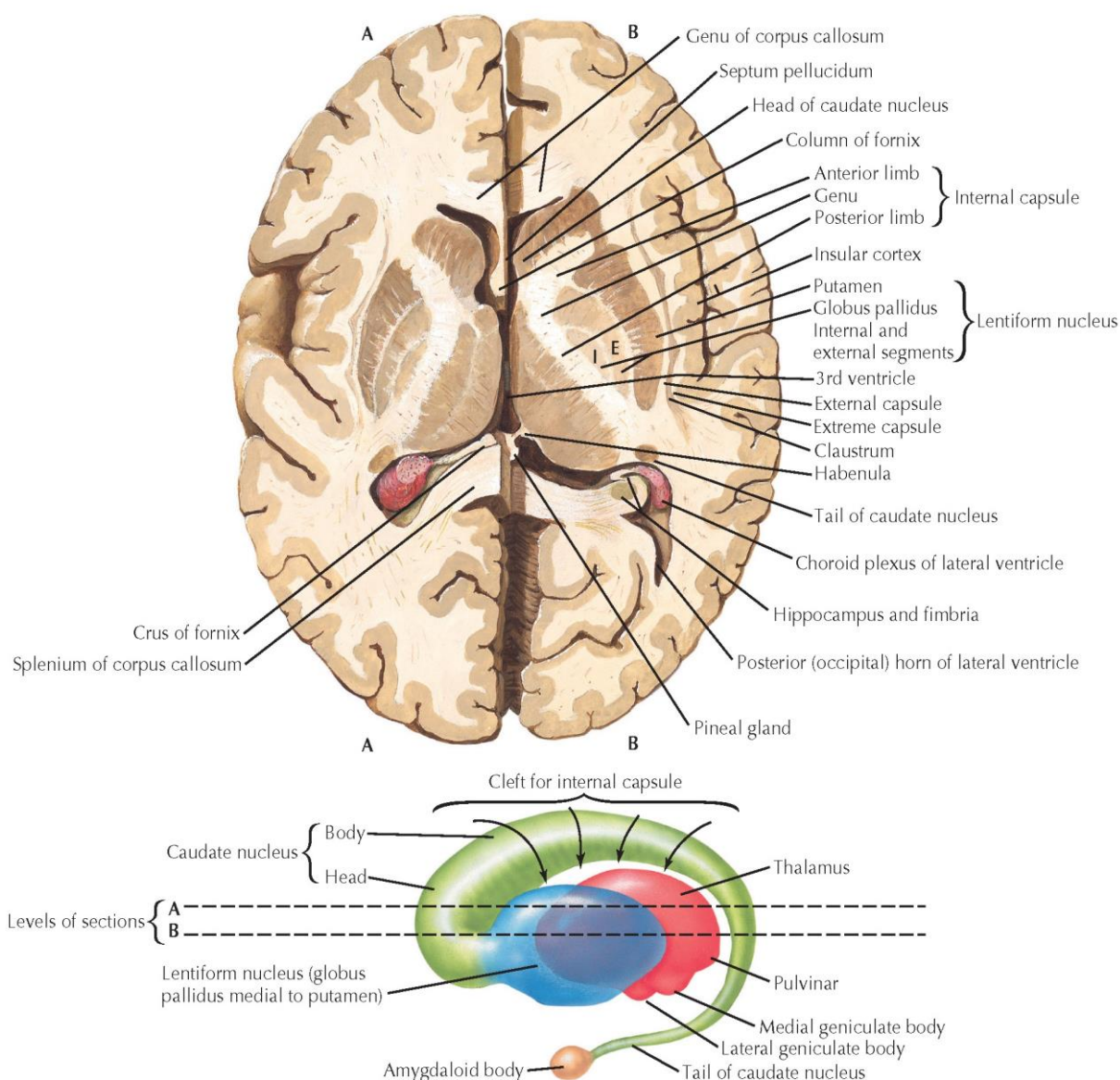
## B) The Lentiform Nucleus

★ It consists of 2 parts:

- 1- **A larger darker lateral part:** the **putamen**.
- 2- **A smaller pale medial part:** the **globus pallidus**.
  - The globus pallidus is divided by a lamina of white matter called internal medullary lamina into internal and external segments .

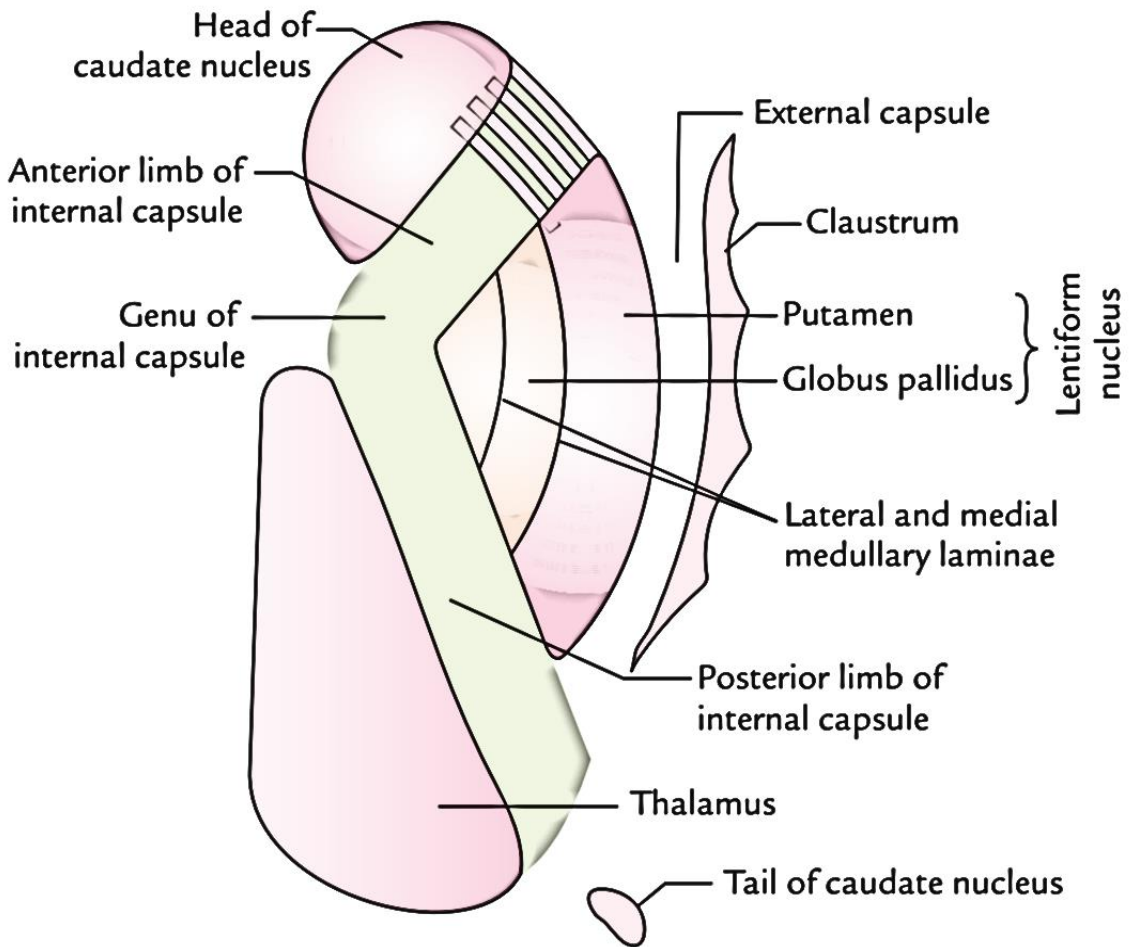
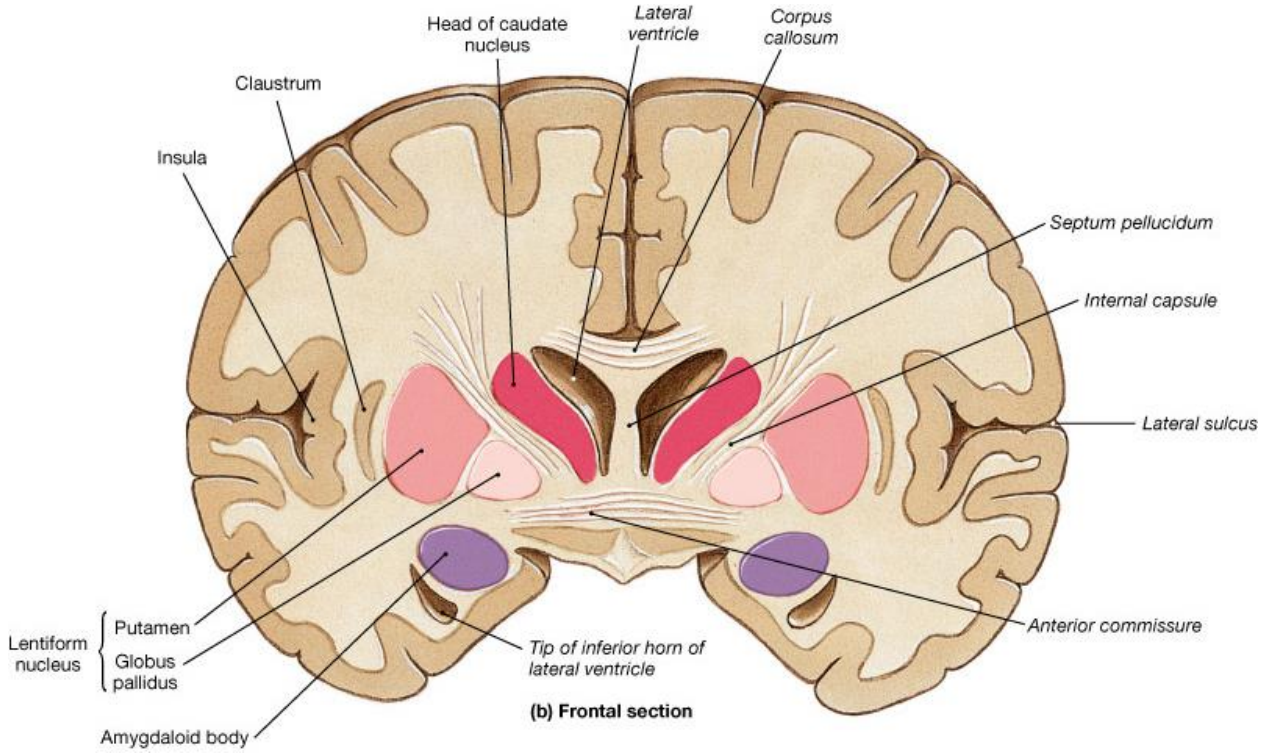
★The lentiform nucleus looks like a **biconvex lens** having two convex surfaces; **medial and lateral:**

- **The lateral surface** of the nucleus is **gently convex** and is **related to** a thin layer of white matter, termed the **external capsule** which separates the nucleus from a thin sheet of gray matter, known as the **claustrum**.



Schematic illustration showing interrelationship of thalamus, lentiform nucleus, caudate nucleus, and amygdaloid body (viewed from side).

- **The medial surface** of the nucleus is **markedly convex** and is **related to the internal capsule** which **separates** the lentiform nucleus from the **thalamus** and the head of **caudate** nucleus **except anteriorly** where the anterior end of the **putamen** **becomes continuous with the head of caudate** as well as with the gray matter of the **anterior perforated** substance.
- The lentiform nucleus has two capsules of white matter (nerve fibres); internal and external capsules.



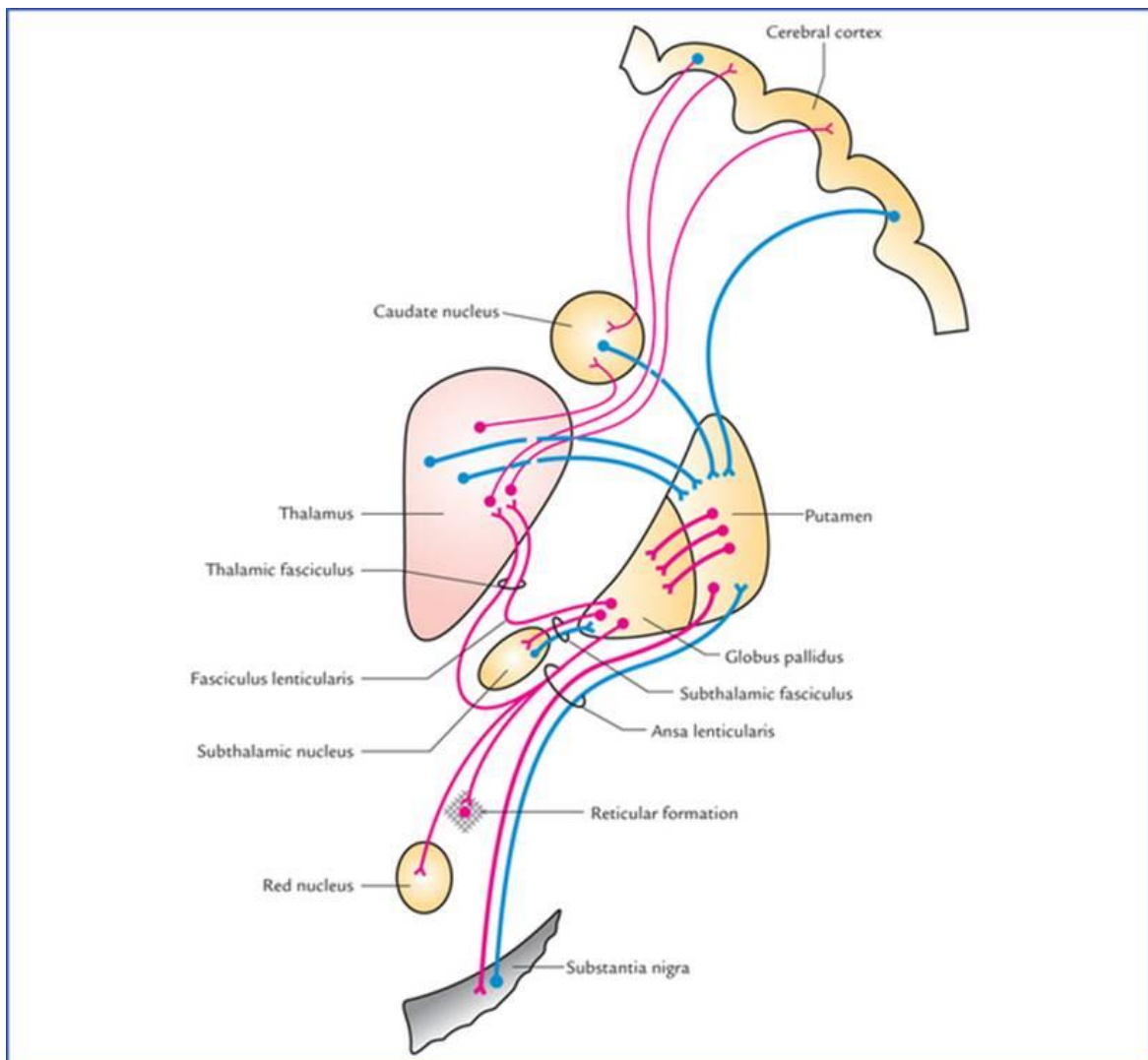
\* **Function and connections of corpus striatum:**

- The corpus striatum is an **extra-pyramidal** center.
- **Afferent fibers:** The putamen and caudate nucleus receive most of the afferent fibers to the globus pallidus from the following 3 main sources:

**1- Corticostriate** fibers from the cerebral cortex.

**2- Thalamostriate** fibers from the thalamus.

**3- Nigrostriate** fibers from substantia nigra.



- **Efferent fibers: The globus pallidus** gives rise to most of the efferent fibers leaving the corpus striatum to the following sites:

**1- Subthalamus.**

**2- Thalamus.**

**3- Descending fibers to the *substantia nigra, red nucleus* ,  
reticular formation of midbrain and olivary nucleus.**

\* **Applied anatomy:**

- Lesions in the corpus striatum leading to **Parkinson's disease** which is characterized mainly by the followings:
  - 1- Rigidity of muscles.
  - 2- Tremors at rest.
  - 3- Loss of automatic association movements as arm swinging during walking.

### Parkinson's Disease Symptoms

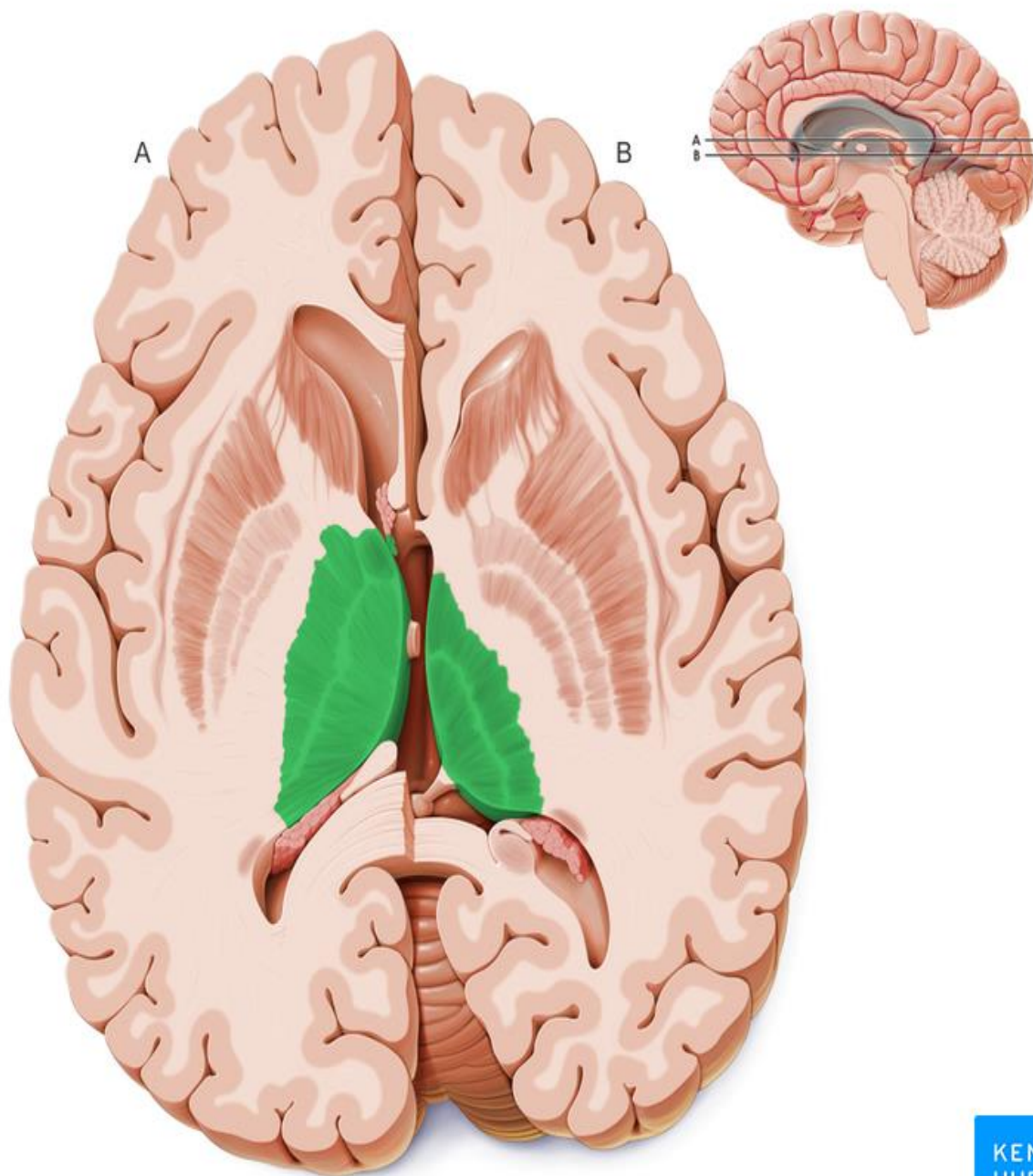


## II) The Amygdaloid Nucleus

- ★ It is a **small round mass of gray matter** lies just deep to **the uncus**.
- ★ It lies at the **anterior end of the tail** of the **caudate** nucleus, in the anterior end of the **roof of the inferior horn** of lateral ventricle.
- ★ It is a **smell** center and form part of limbic system.
- ★ Its **efferents** form a band of nerve fibers called the **stria terminalis** which is a **pathway for integration of olfactory and visceral functions**.
- ★ Efferent fibers in the stria terminalis **end in** the following nuclei:
  - 1- Hypothalamus.
  - 2- Septal nuclei (in the septum pellucidum).
  - 3- Habenular nuclei.

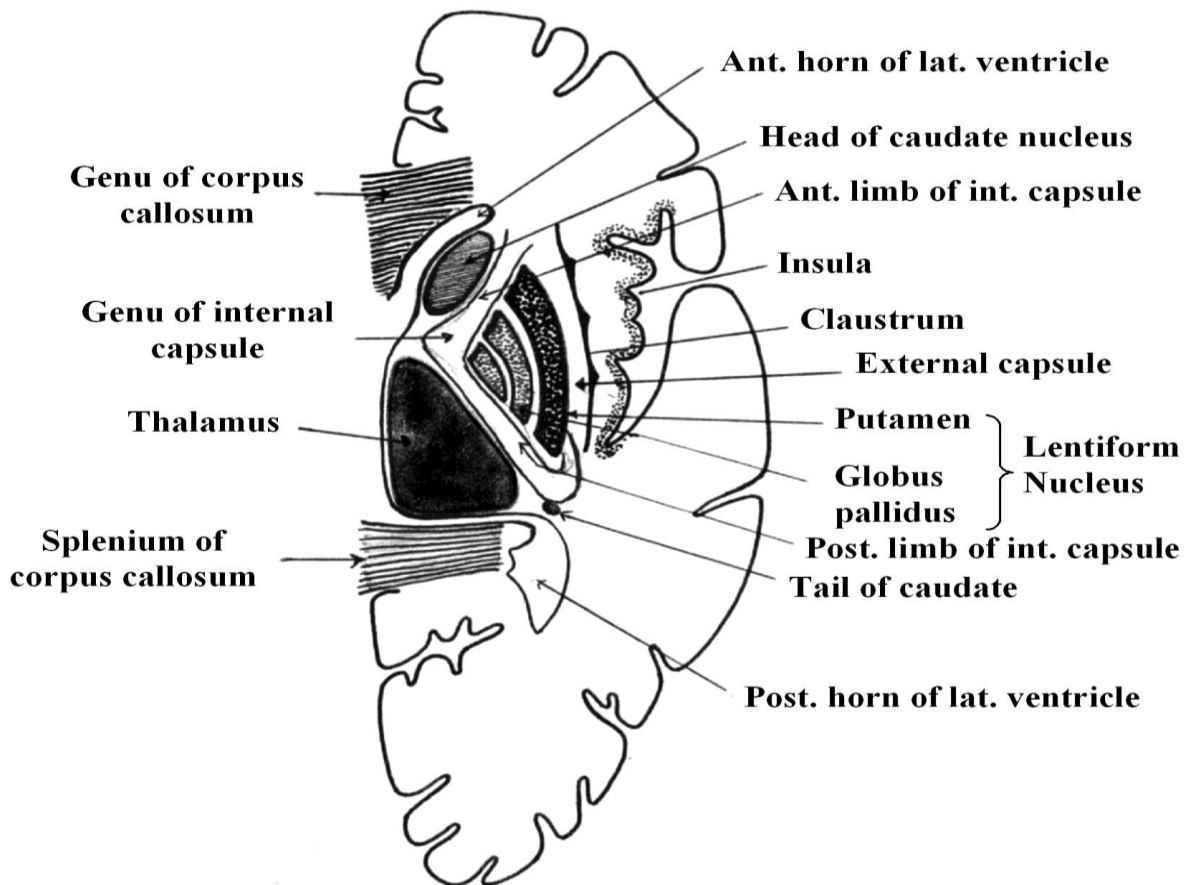
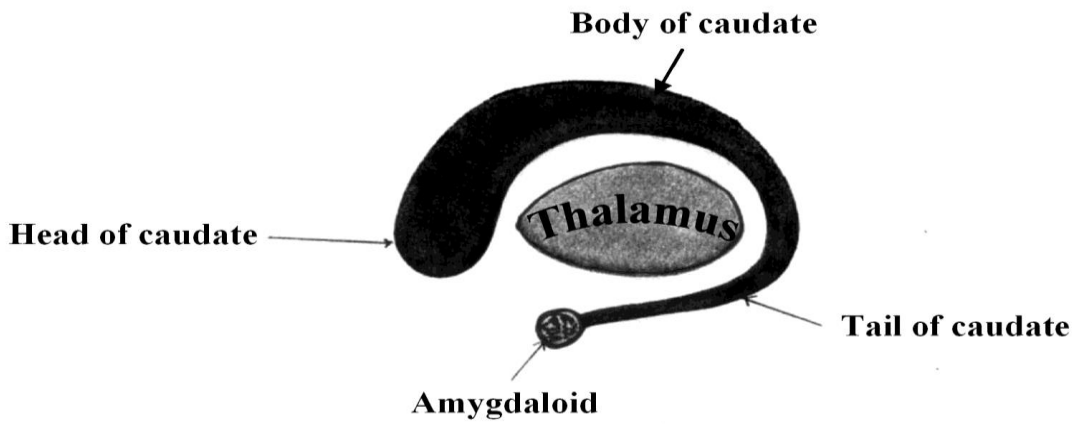
## III) The Claustrum

- ★ It is a **thin layer** of gray matter **between** the lateral surface of the **lentiform** nucleus and the **insula**.
- ★ It is separated from the lentiform nucleus by a thin layer of white matter called the **external capsule**.
- ★ It is separated from the insula by a thin layer of white matter called the **extreme capsule**.
- ★ Its function is unknown.



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**Transverse Section of the Cerebral Hemisphere**



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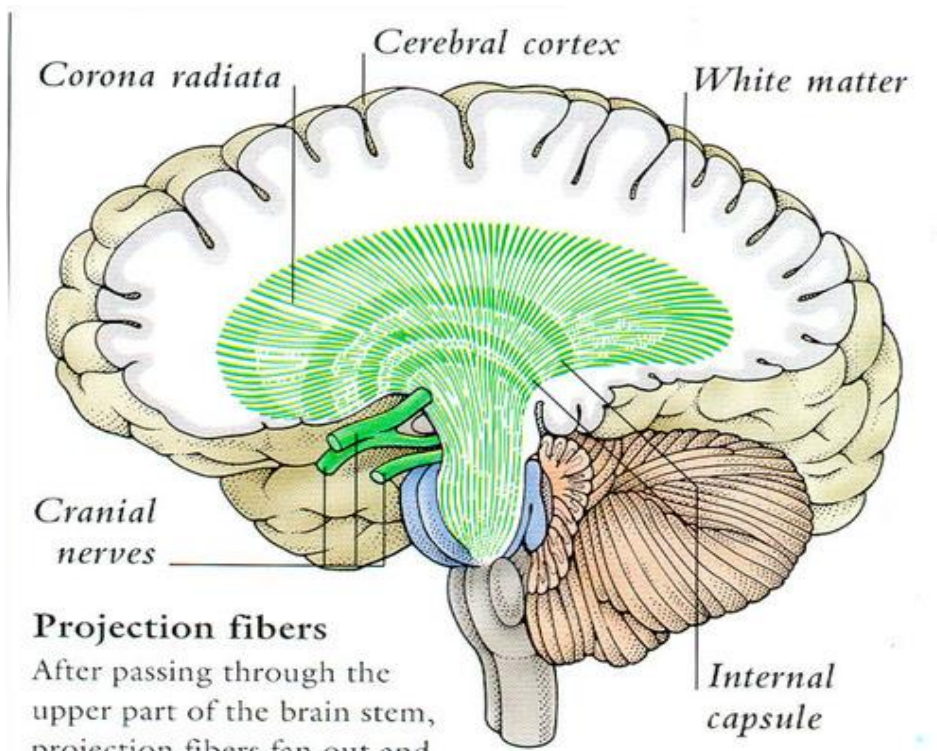
## Internal Capsule

### ★ Definition and site:

- It is a broad bundle of **projection fibers** which lies **between** the **lentiform** nucleus (laterally) and head of **caudate** and **thalamus** (medially).
- It **almost** completely **divides** the **corpus striatum** into two parts and separates the **lentiform** nucleus (laterally) from the **thalamus** (medially).
- The internal capsule is **continuous above** with the **corona radiata** and **below** with the **basis pedunculi** of the cerebral peduncles of the midbrain.

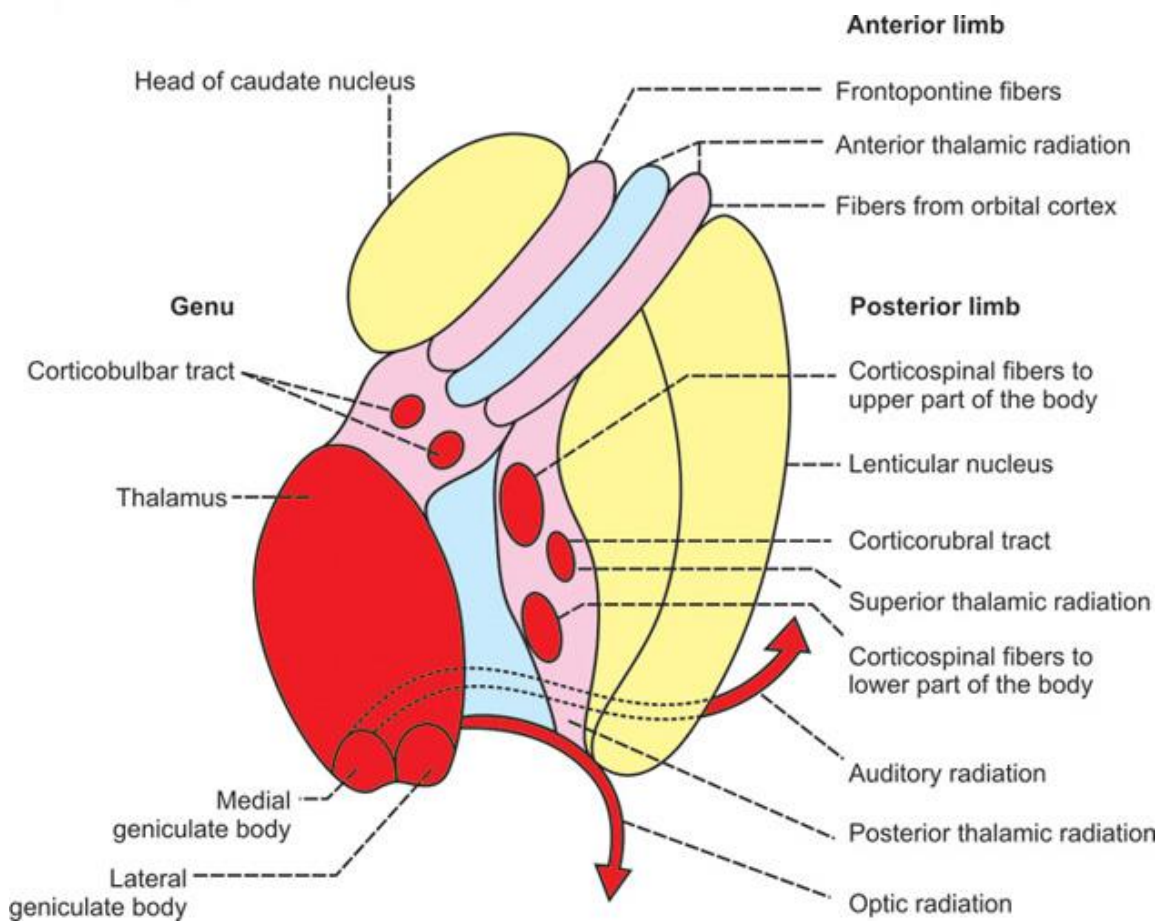
### ★ Shape, parts, relations and contents:

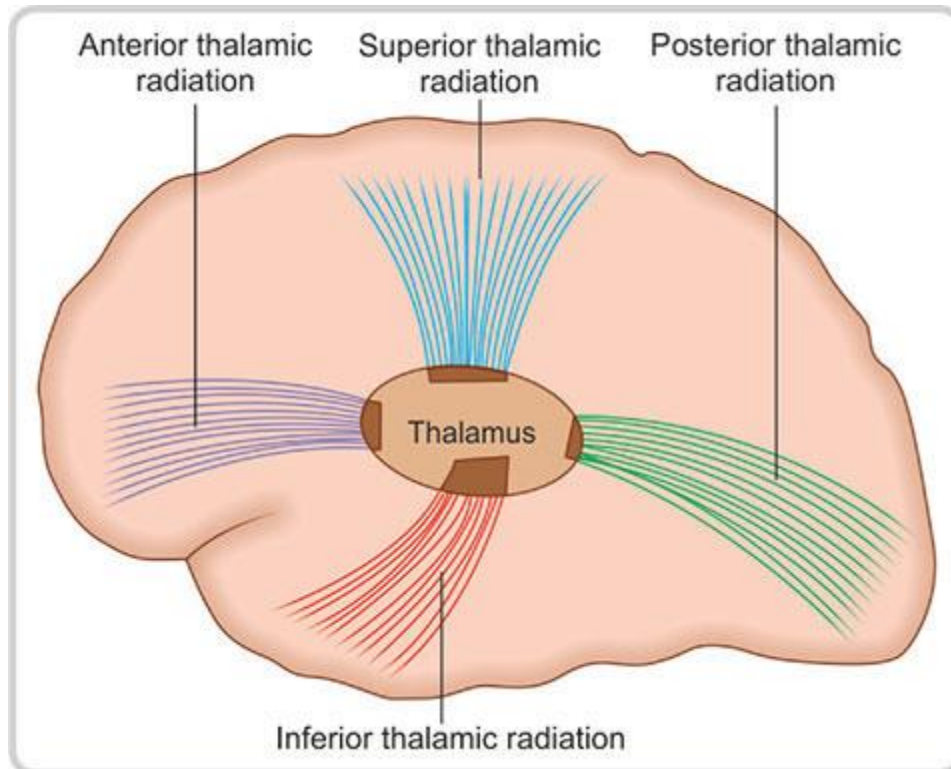
- In a horizontal section the internal capsule has a **V-shaped** appearance, having:
  - 1) **A short anterior limb:**
    - It lies **between** the **lentiform** nucleus (laterally) and the **head of caudate** nucleus (medially).
    - It contains the following fibers:
      - a-**Fronto-pontine** fibers: **descends** from frontal lobe to pontine nuclei in the pons.
      - b-**Anterior thalamic radiation: ascends** from anterior and medial thalamic nuclei to prefrontal area.



**Projection fibers**

After passing through the upper part of the brain stem, projection fibers fan out and extend to the cerebral cortex, forming the corona radiata.





## 2) An apex (genu):

- It is the **angle** at the junction of the anterior and the posterior limbs.
- It fits into the interval **between** the **head of the caudate** (in front) and the **thalamus** (behind).
- It contains the **cortico-nuclear** (cortico-bulbar) fibers which descend from area 4 to motor nuclei of cranial nerves.

## 3) A longer posterior limb:

- It lies **between** the **lentiform** nucleus (laterally) and the **thalamus** (medially).
- It contains the following fibers:
  - a- **Cortico-spinal** fibers:
    - These fibers arise from **area 4** and end on the **AHCs** of the spinal cord.

- The fibers for **upper limb** are most **anterior**, fibers for **lower limb** are most **posterior** and fibers for the trunk in between.

b- **Fronto-pontine** fibers: descends from frontal lobe to pontine nuclei in the pons.

c- **Superior thalamic (sensory)** radiation: ascends from the posterior ventral nuclei of the thalamus to area 3,1,2.

d- **Corticorubral** fibers: descend from front lobe to red nucleus.

e- **Cortico-striate** fibers: descend from area 6 to corpus striatum.

#### 4) **A retro-lenticular part:**

- It lies **behind the lentiform** nucleus.
- It contains the following fibers:
  - a- **Posterior thalamic (Optic) radiation:** arise from **lateral geniculate** body and end in **visual area** (area 17) of the occipital lobe.
  - b- **Parieto-pontine** and **occipito-pontine** fibers: descend from parietal and occipital lobe to pontine nuclei.

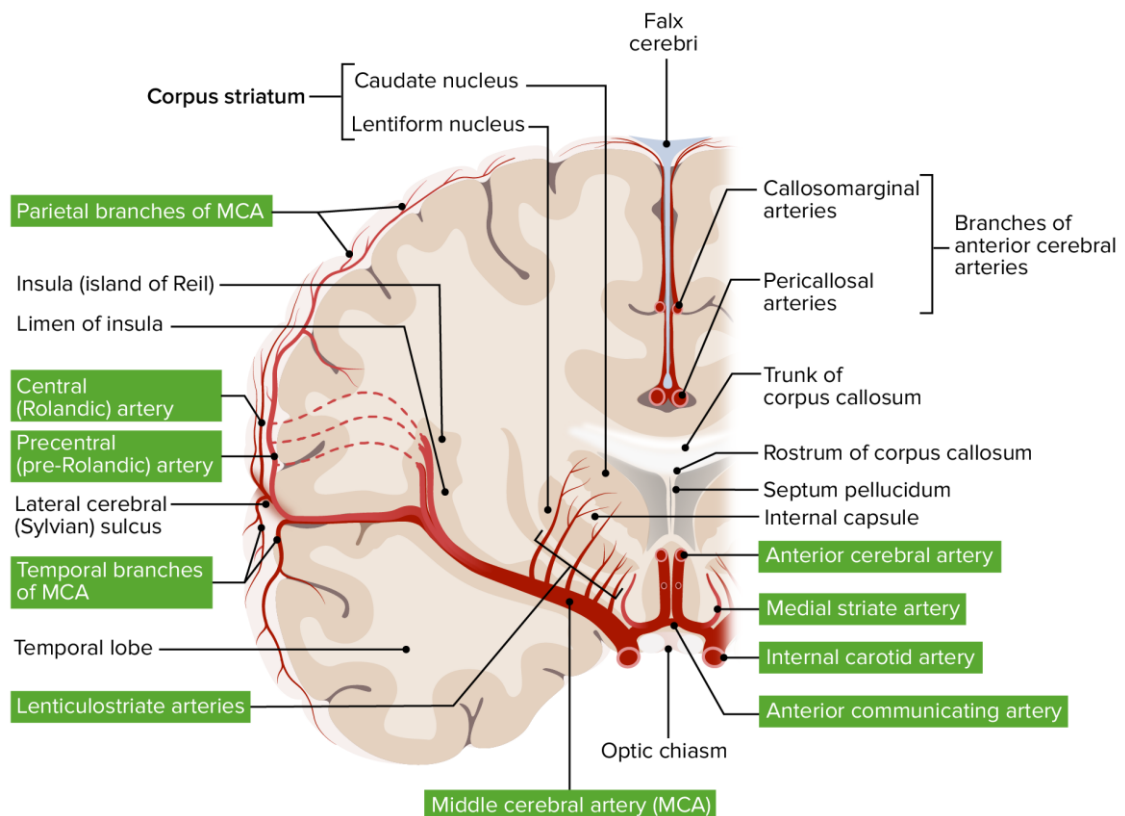
#### 5) **A sub-lenticular part:**

- It lies **below the lentiform** nucleus.
- It contains the following fibers:
  - a- **Inferior thalamic (auditory) radiation:** arise from **medial geniculate body** and end in the auditory area (area 41 and 42)

b- **Temporo-pontine** fibers: descend from temporal lobe to pontine nuclei.

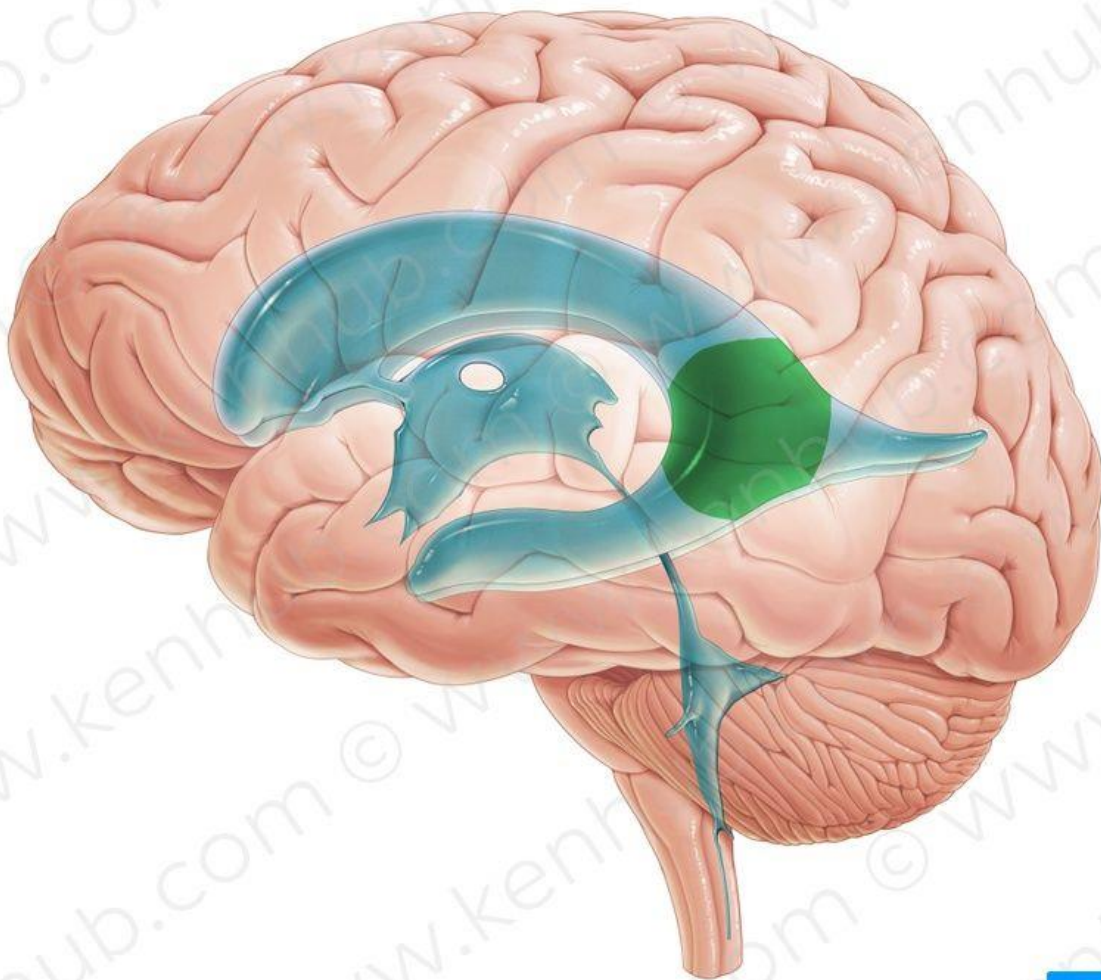
★ **Blood supply of internal capsule and basal nuclei:**

- **Anterior** part of anterior limb of **internal capsule** and anterior part of **corpus striatum** is supplied by the central branches of **anterior cerebral artery**.
- **Posterior** part of anterior limb, genu and anterior part of posterior limb of internal capsule and posterior part of **corpus striatum** are supplied by the central branches of **middle cerebral artery**.
- **Posterior** part of posterior limb, retro-lenticular and sub-lenticular parts of internal capsule, tail of caudate and amygdaloid nucleus are supplied by **anterior choroidal artery** (branch of internal carotid artery)



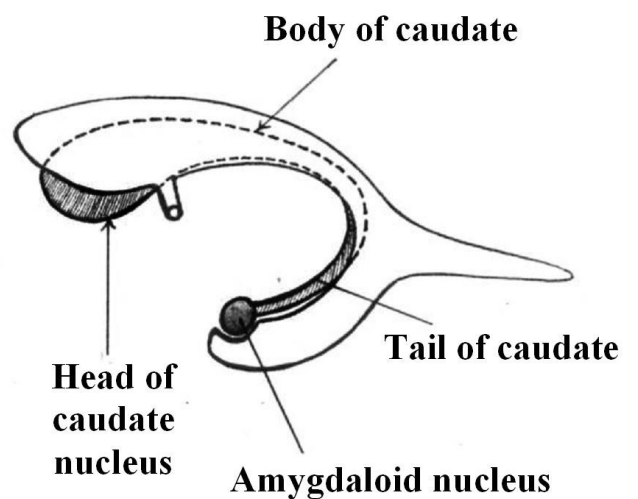
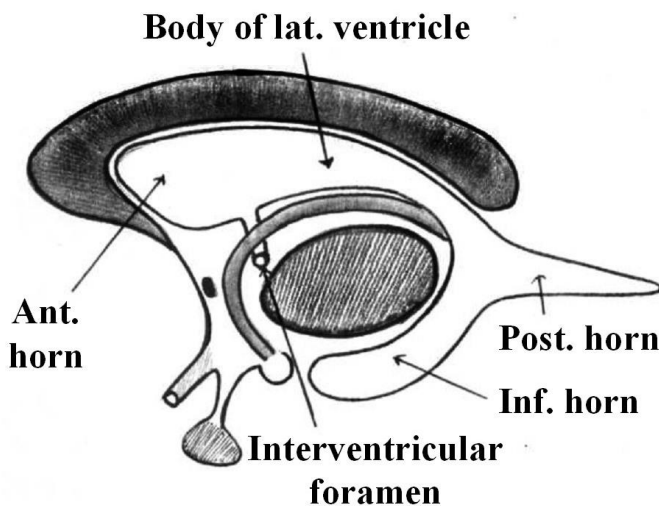
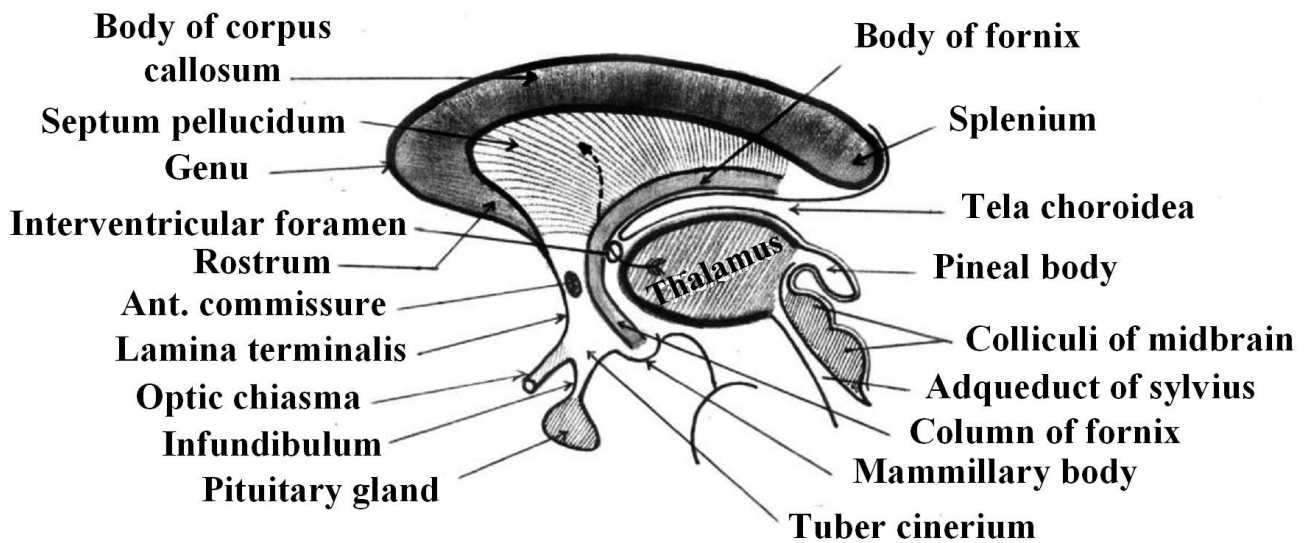
## Lateral Ventricle

- ★ **Site:** It is the **cavity of the cerebral hemisphere**. There are two lateral ventricles; one in each cerebral hemisphere.
- ★ **Lining:** It is lined by a cubical ciliated epithelium which is termed the **ependyma**.



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### Lateral Ventricle

★ **Communications:** The lateral ventricle communicates with the third ventricle through the **inter-ventricular foramen of Monro** which is situated in the anterior part of the medial wall of the lateral ventricle and is bounded in front by the **column of the fornix** and behind by the anterior end of the **thalamus**.

★ **Shape and parts:** The lateral ventricle is an elongated **crescentic cavity** which consists of a **body** (central part) and **3 horns** (anterior, posterior and inferior):

**1) The anterior horn:**

- It is the part in **front of the interventricular foramen** which extends into the frontal lobe.

**2) The central part (body):**

- It extends from the **interventricular foramen** to the **splenium** of the corpus callosum, where it becomes **continuous with** both the posterior and anterior horns.
- It lies in the **parietal lobe**.

**3) The posterior horn:**

- It runs in the occipital lobe.

**4) The inferior horn:**

- It is the direct continuation of the body; it passes **around** the posterior end of **the thalamus**, then into the **temporal lobe** as far as the **uncus**.

❖ **N.B.:** The **region of meeting** of the posterior end of the body with the posterior and inferior horns is called the **collateral trigone**.

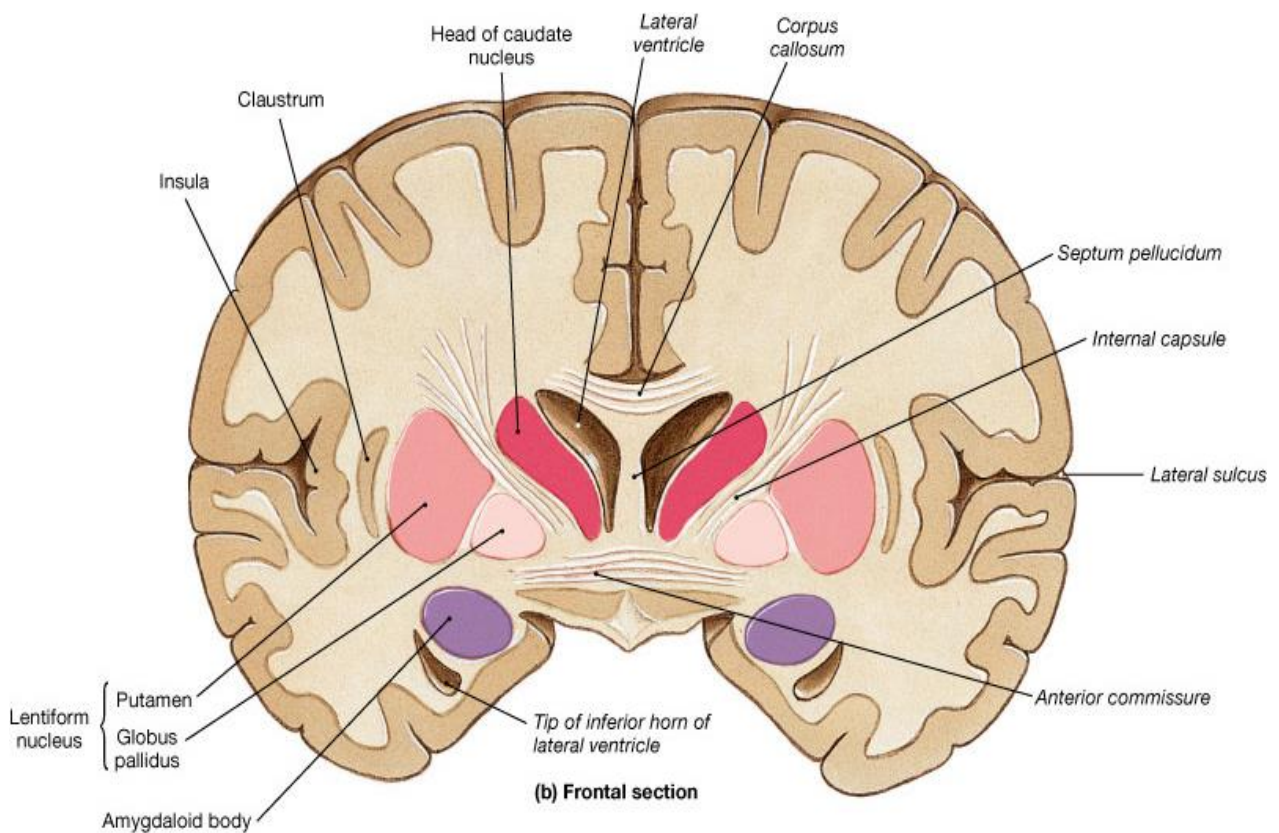
★ **Boundaries and relations:**

**1) The anterior horn:** Is triangular in coronal section.

- **Roof:** The anterior part of the body of corpus callosum.
- **Medial wall:** is vertical and formed of Anterior part of septum pellucidum(above) and body of fornix (below and behind).

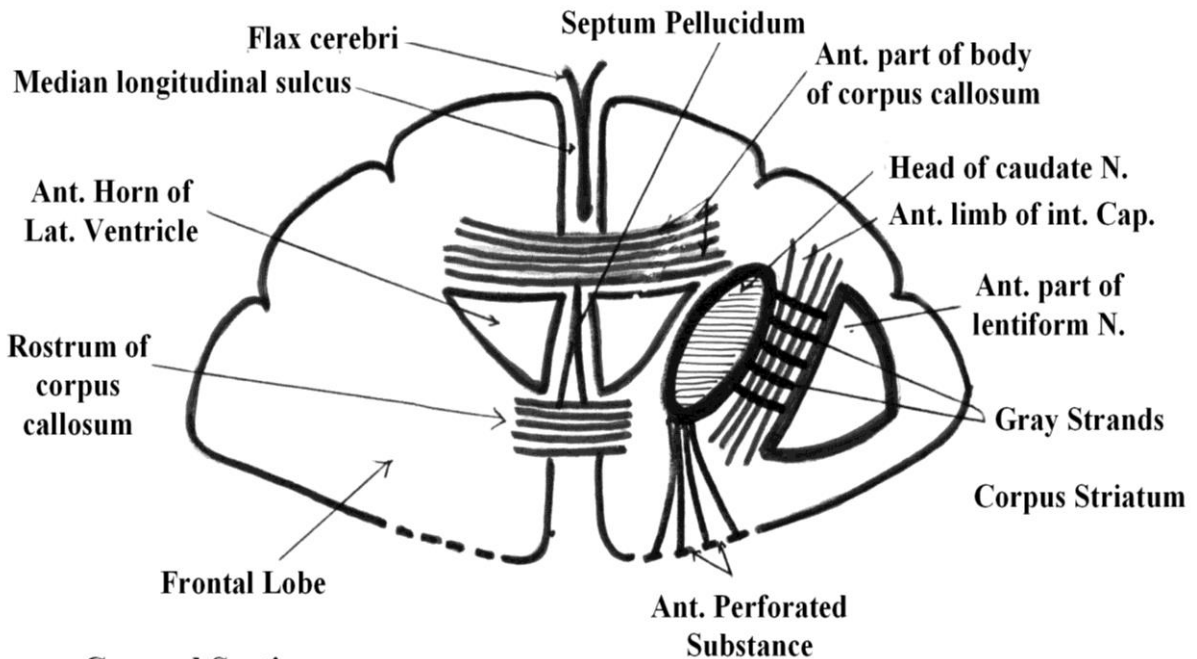
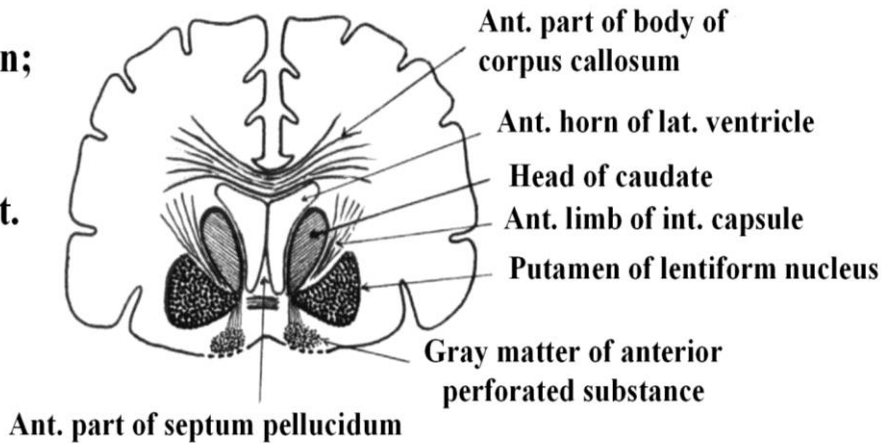


- **Lateral wall and floor:** are sloping and formed of head of caudate nucleus and the upper surface of the rostrum of corpus callosum.
- **Anterior wall (limit):** The genu of corpus callosum.



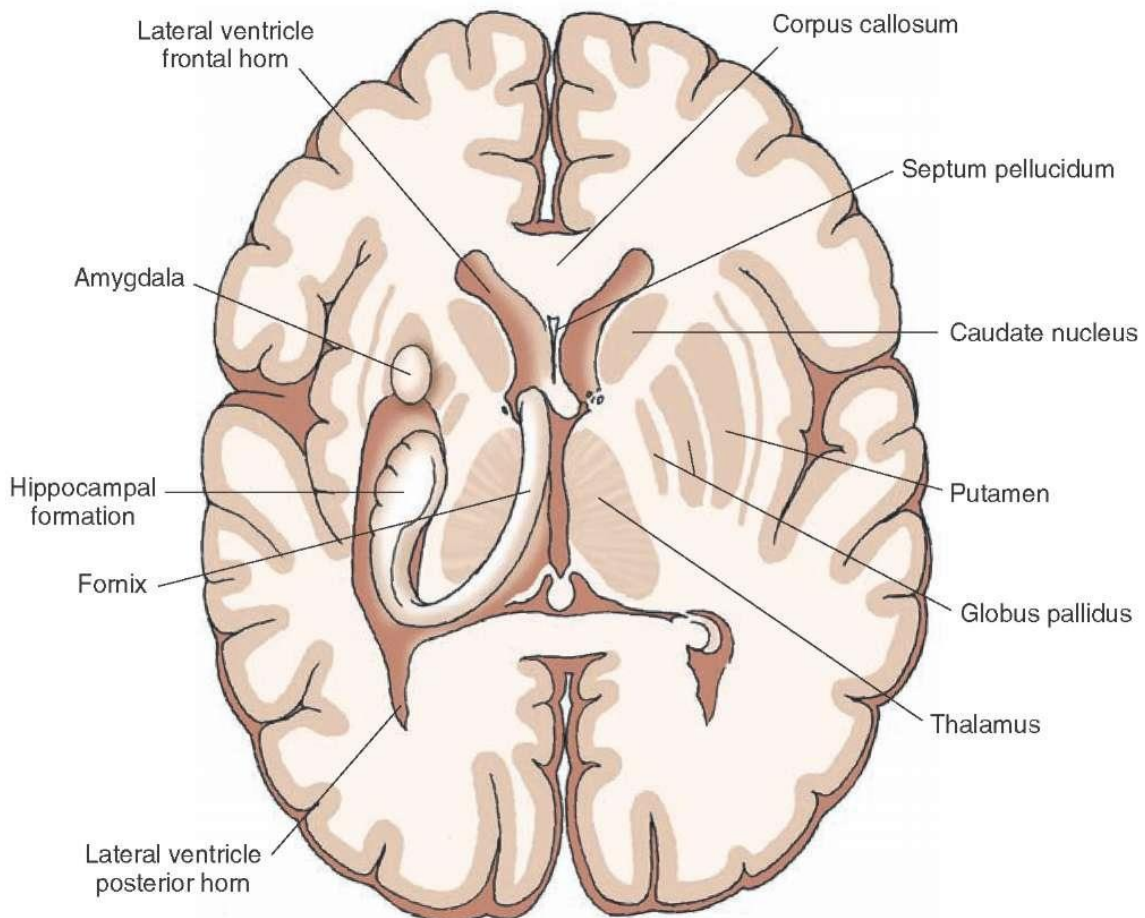
**Coronal Section at the level of anterior horn of lateral ventricle**

**Coronal Section;  
Relations &  
Boundaries of  
Ant. horn of lat.  
ventricle**



**Coronal Section**

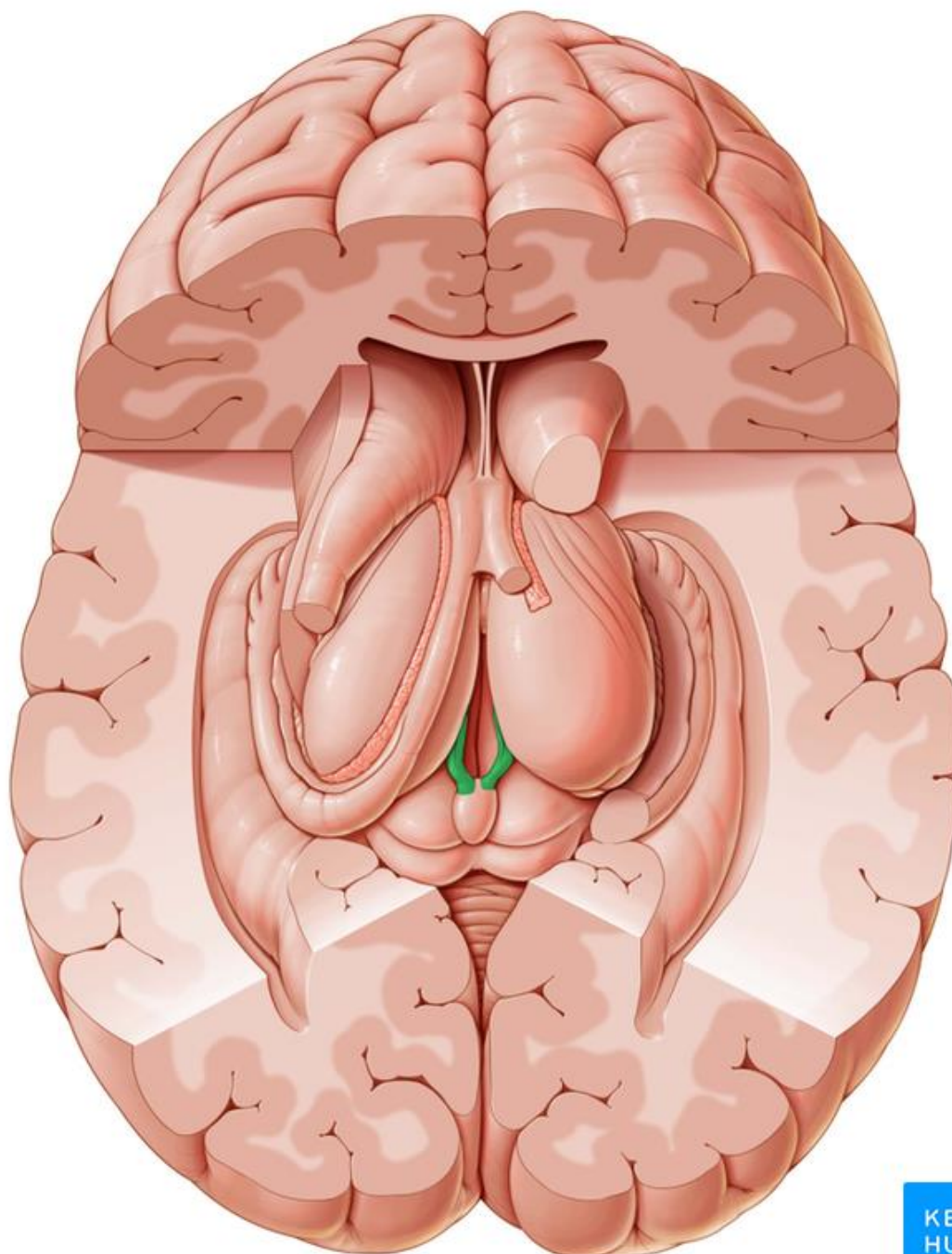
**Anterior Horn of Lateral Ventricle**



**2) The central part (the body):** It is triangular in coronal section.

- **Roof:** It is formed by the posterior part of the body of corpus callosum.
- **Medial wall:** It is formed by the posterior part of the septum pellucidum.
- **Floor:** It is formed from lateral to medial by:
  - a-The **body of the caudate** nucleus which arches above and lateral to the **thalamus**, with the **stria terminalis** and the **thalamo-striate vein** in between.
  - b-The lateral part of the **upper surface of the thalamus**.

- c- **Choroid plexus** of lateral ventricle.
- d- The **body of the fornix** which arches above the medial part of the upper surface of the thalamus.



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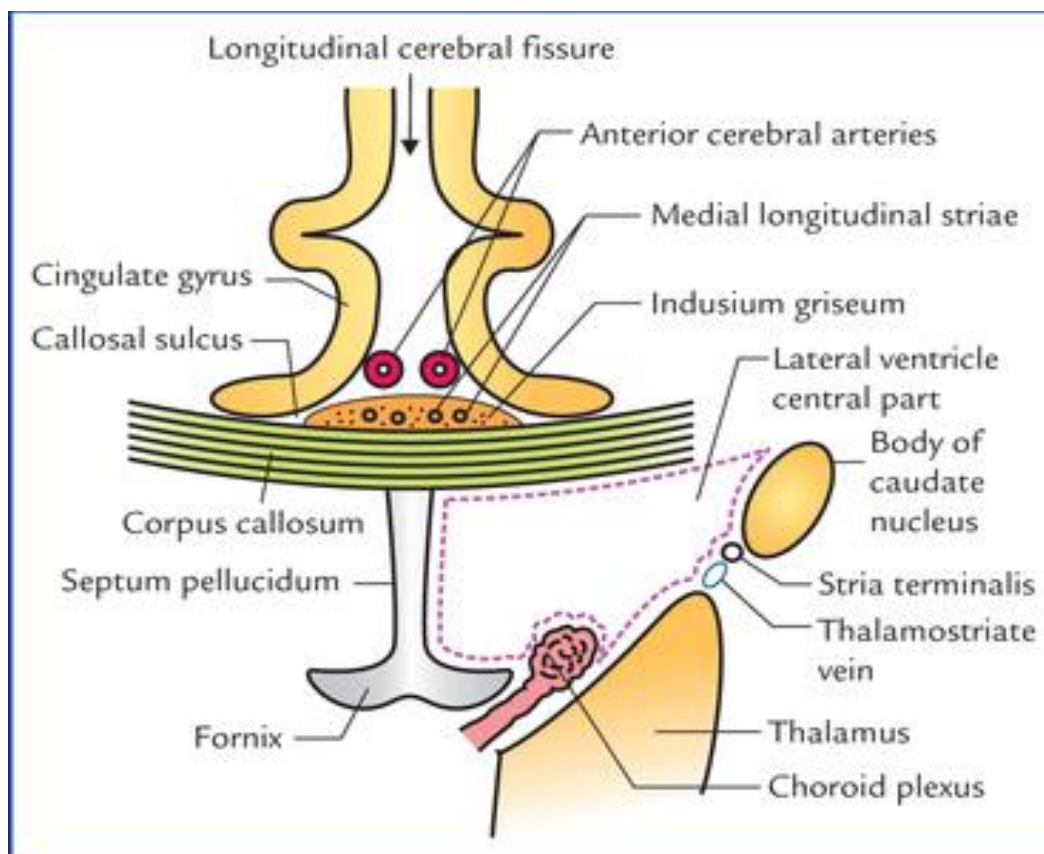
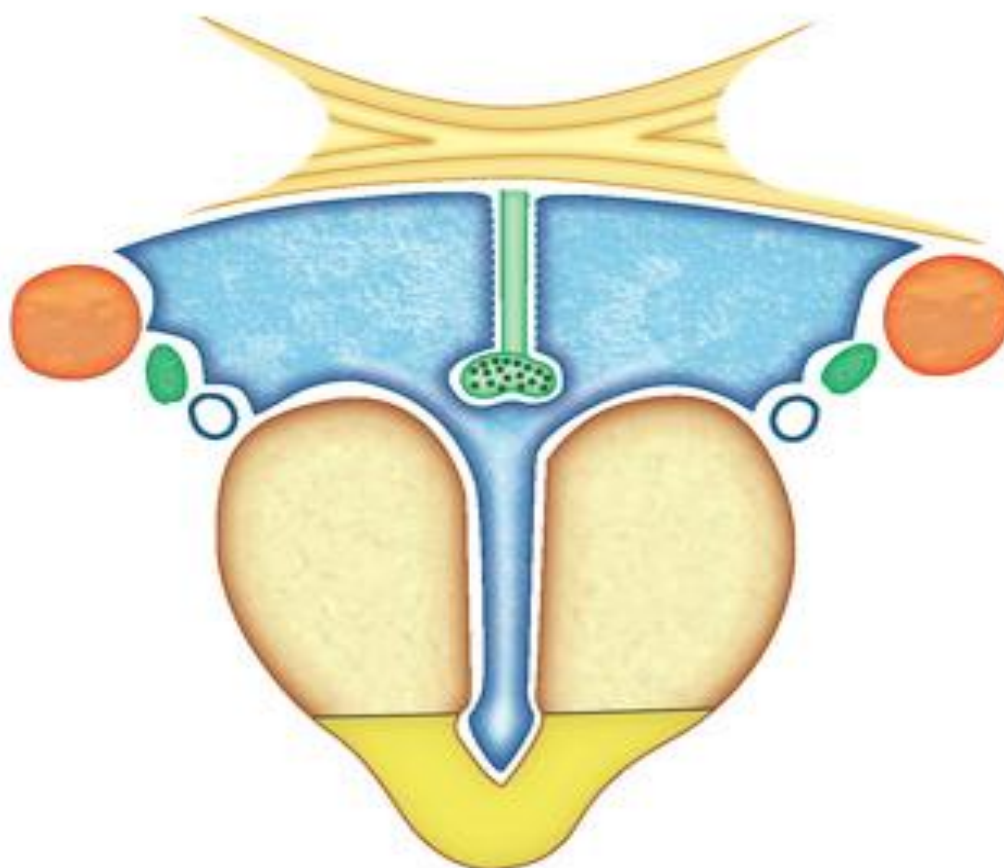
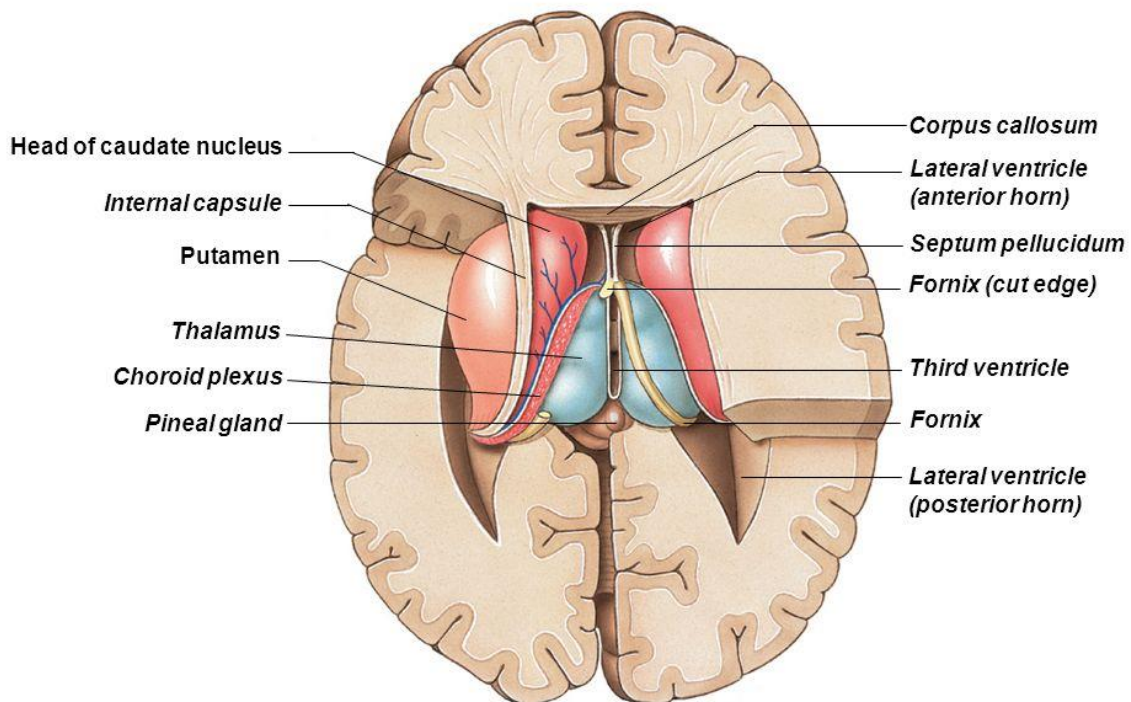


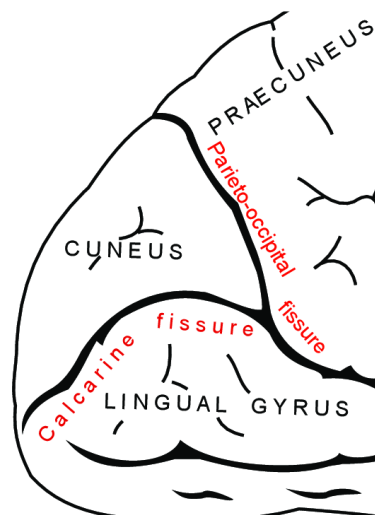
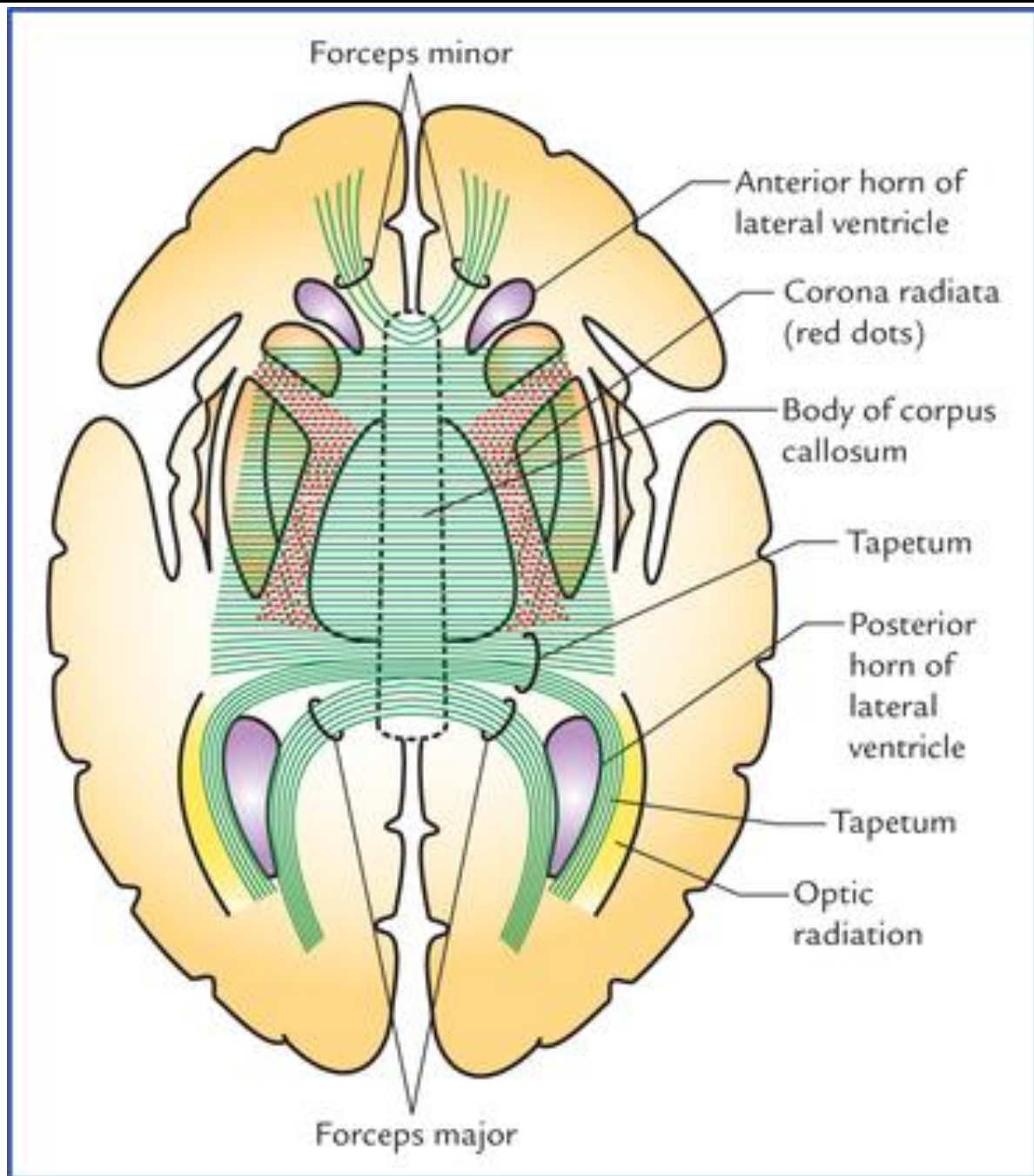
Figure 14-14b The Basal Nuclei

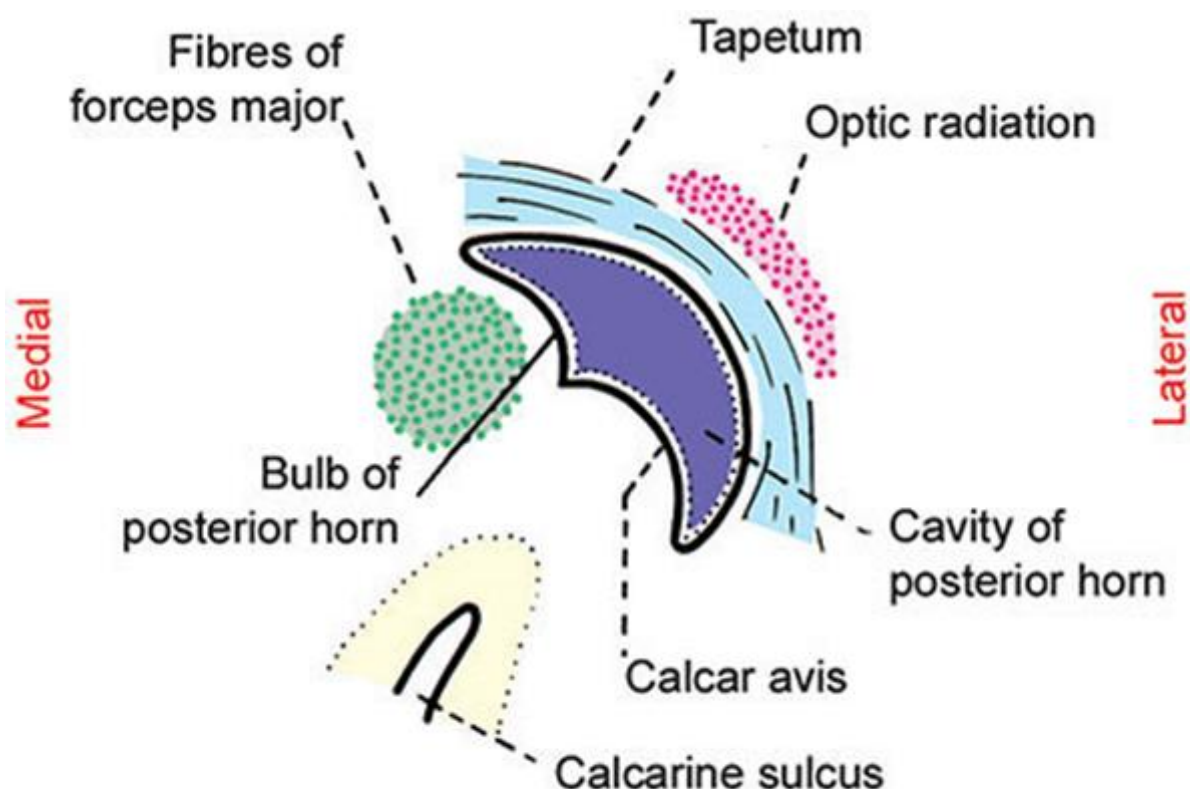


**b** A horizontal section as seen in a dissection

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- 3) The posterior horn:** Begins at the splenium of the corpus callosum and runs backwards and medially in the occipital lobe:
- **Roof and lateral wall:** Are formed by the **tapetum** of corpus callosum, lateral to which run the fibers of the **optic radiation**.
  - **Medial wall:** Is sloping and shows 2 elevations:
    - a- The **upper swelling** is caused by the **forceps major** and is called the **bulb of the posterior horn**.
    - b- The **lower swelling** is produced by the deep **calcarine sulcus** and is termed the **calcar avis**.





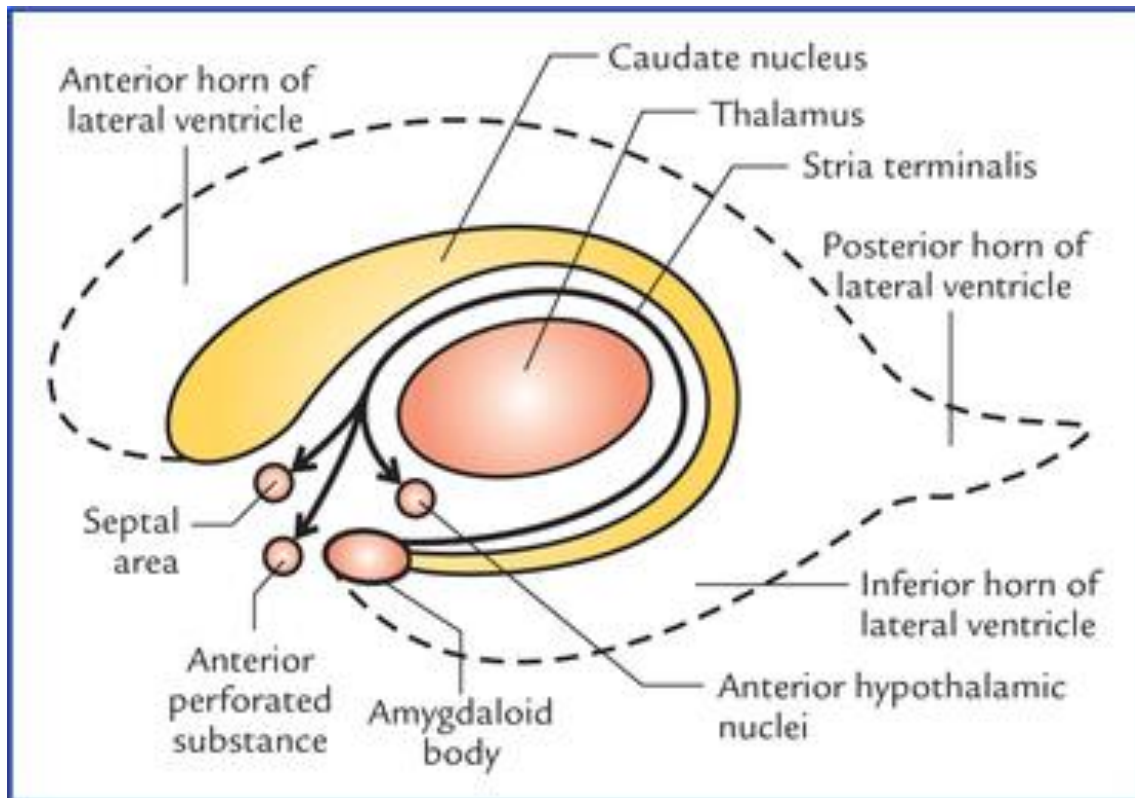
### Posterior horn of lateral ventricle

#### 4) The inferior horn:

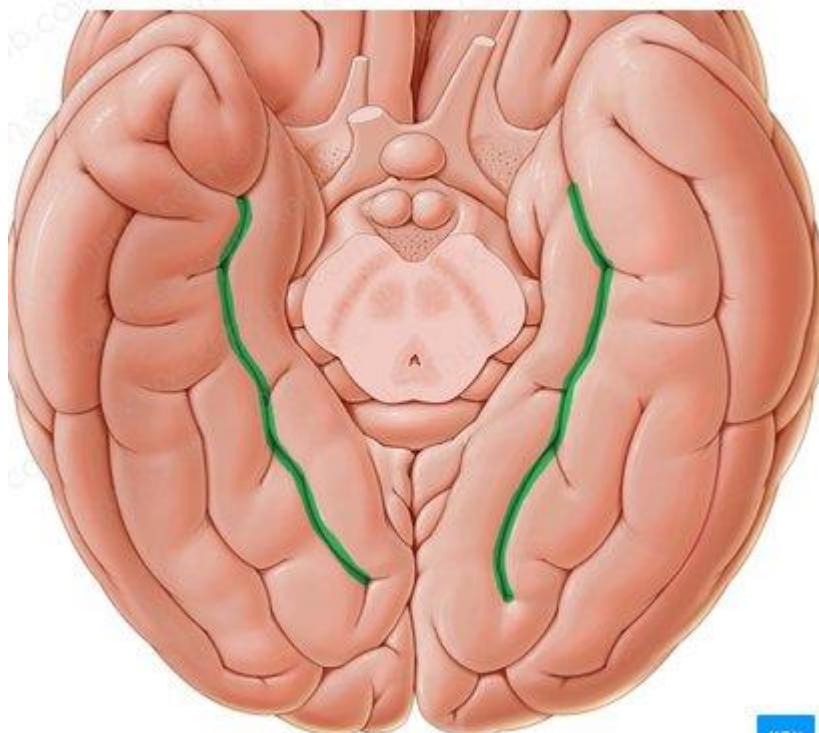
- **Roof:**

- It is formed by the tail of the caudate nucleus passing forwards to end in the amygdaloid nucleus which produces an elevation in the anterior part of the roof.
- The stria terminalis is a bundle of nerve fibres which are the efferents of the amygdaloid nucleus, runs backwards along the medial edge of the tail of caudate in the roof of the inferior horn.



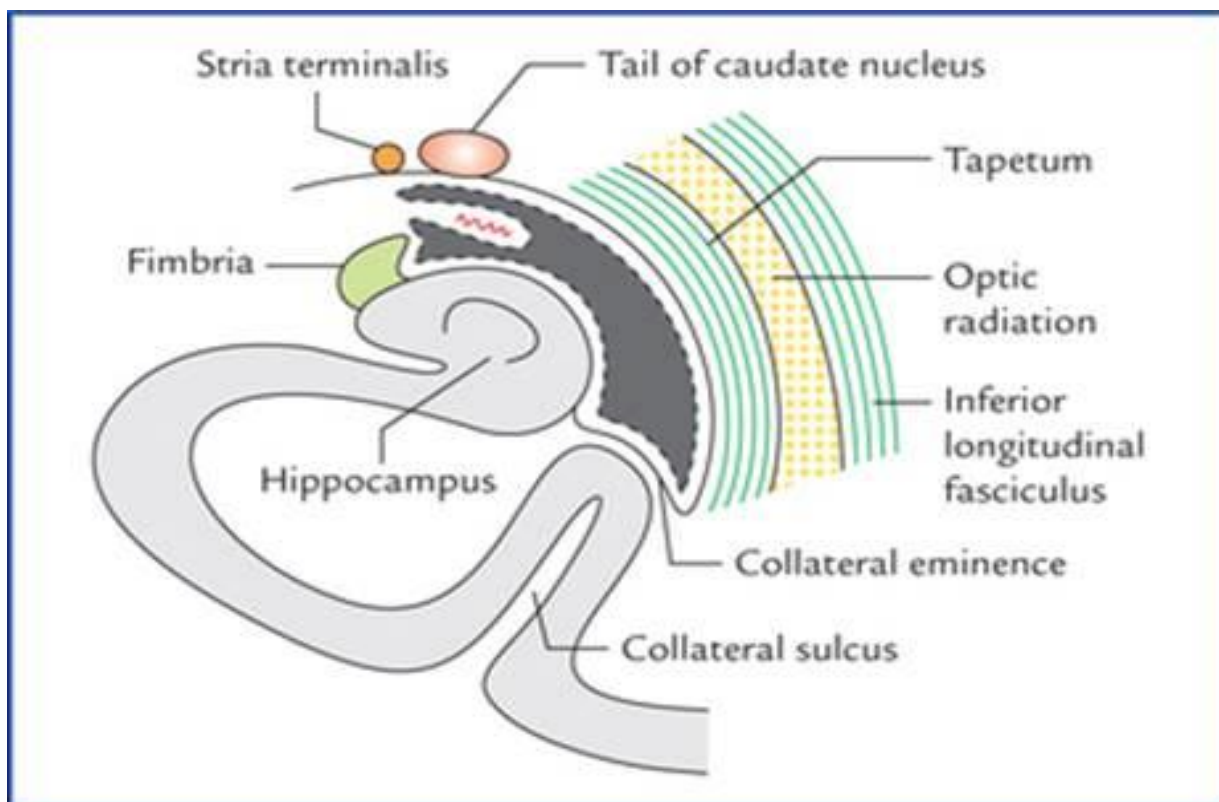


- **Floor:** from medial to lateral it shows:
  - **Fimbria of fornix:** The efferent fibers of hippocampus run backwards on the medial aspect of hippocampus to become continuous with the crus of the fornix.
  - **Hippocampus** is a curved mass of gray matter. Its **anterior end** is expanded to form the **pes hippocampi**.
  - **Collateral eminence** is a slight elevation formed by collateral sulcus.
- **Lateral wall:** It is formed by the tapetum.
- **Medial wall:** It is formed by the lower part of the **choroids fissure** through which the choroids plexus enters the inferior horn.

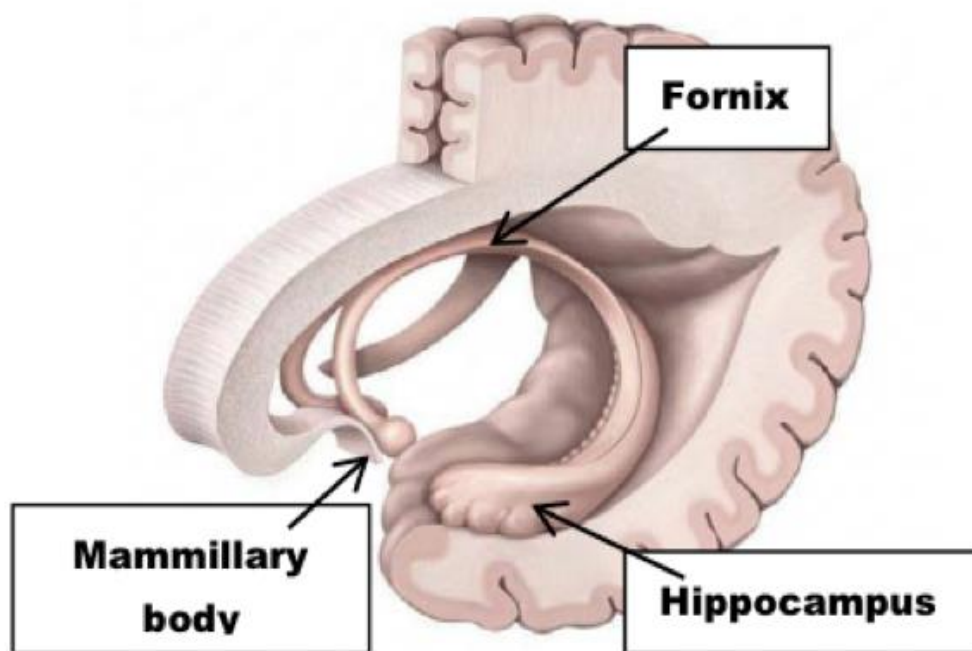


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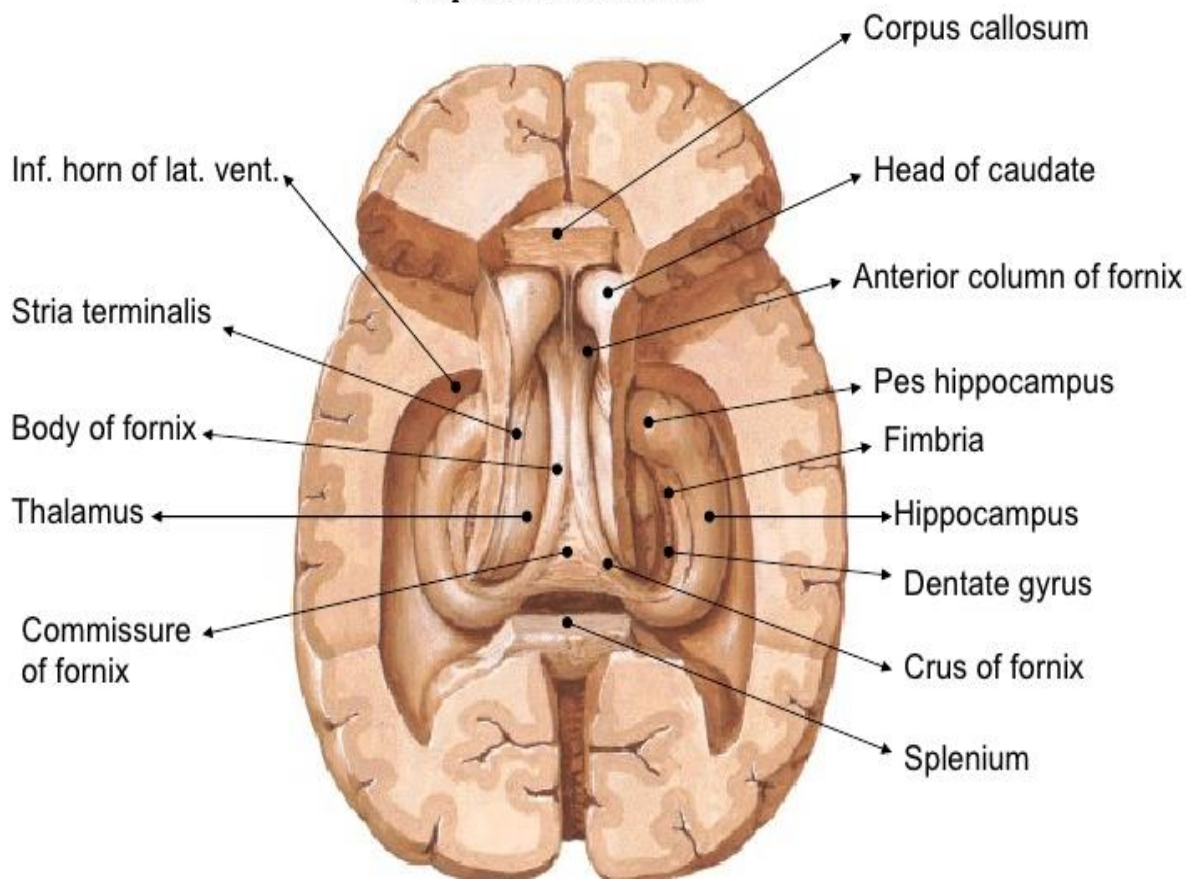
**Collateral sulcus**

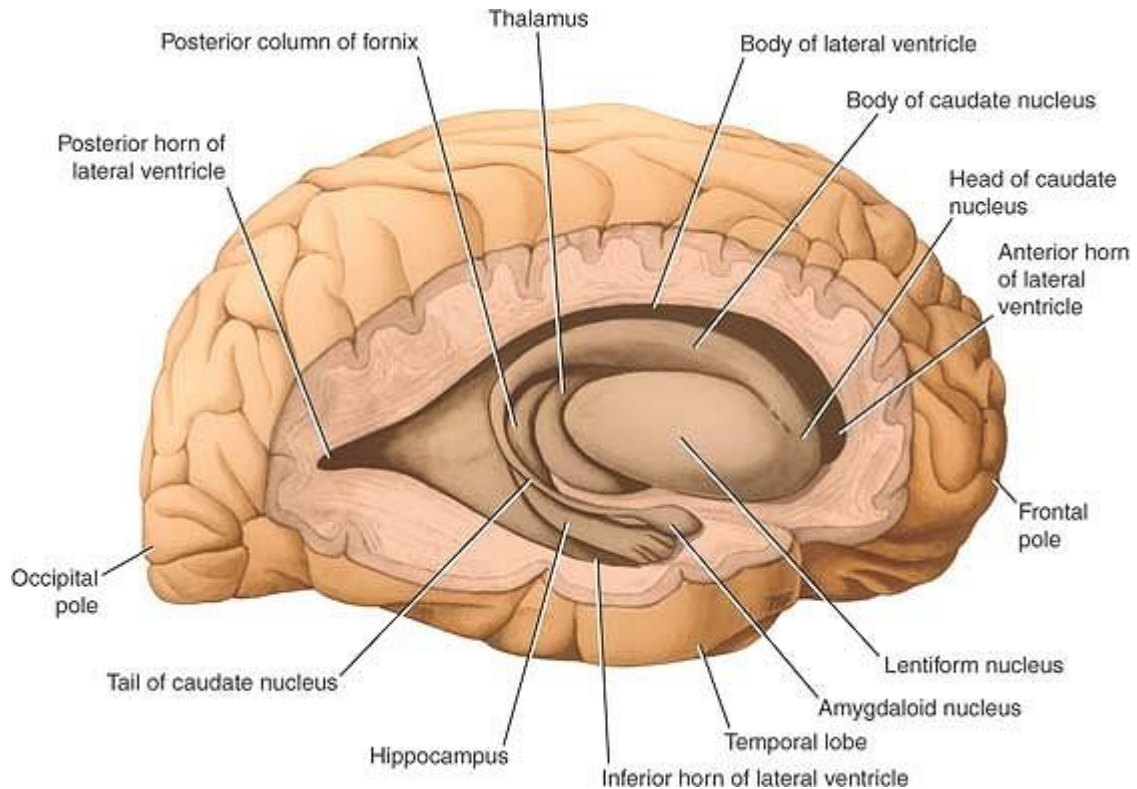


**Inferior horn of lateral ventricle**

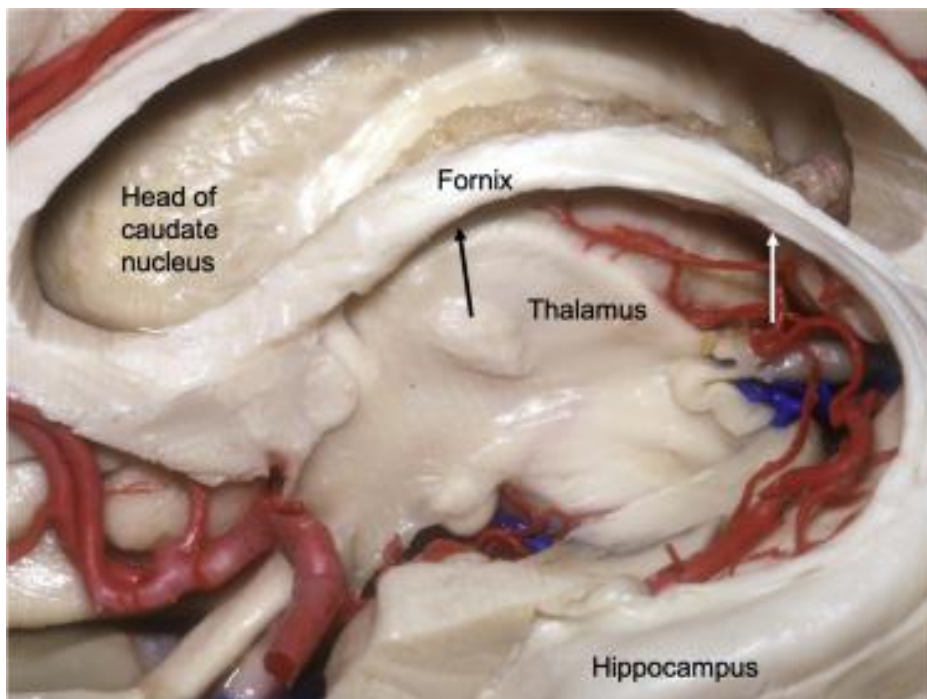


**Hippocampus and Fornix**  
Superior Dissection



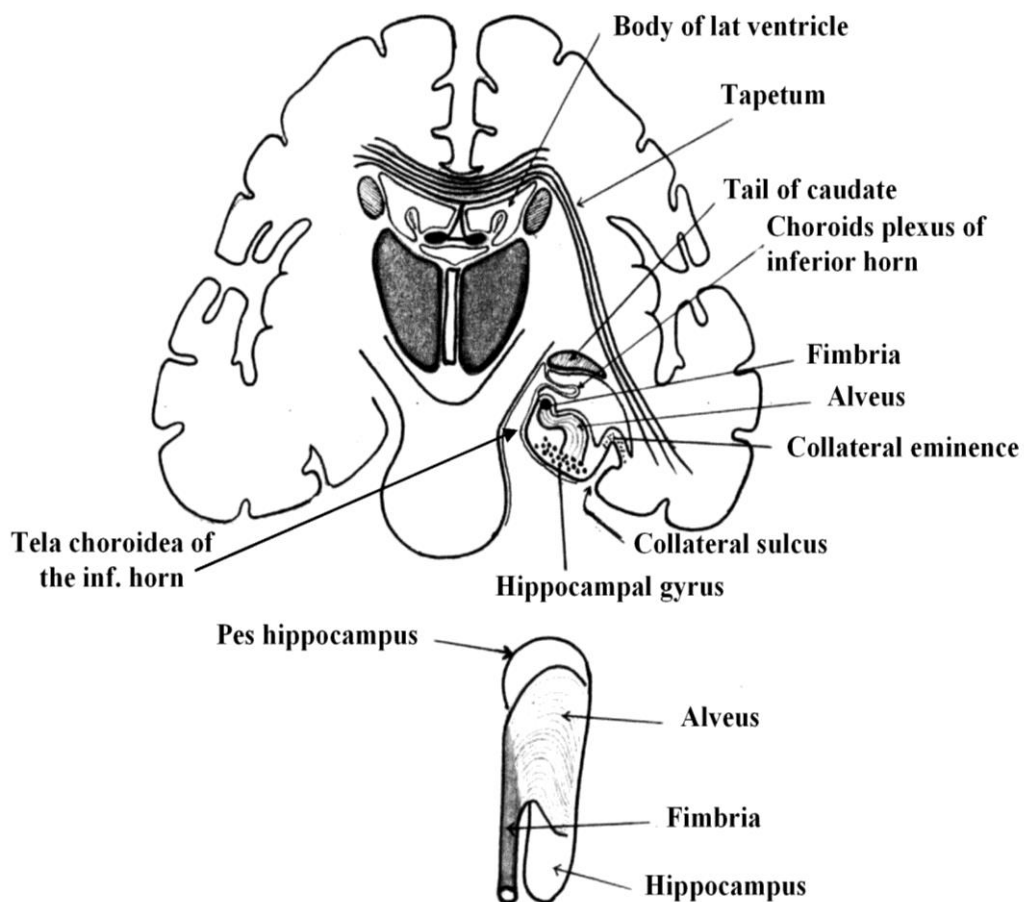


★ **Choroid plexus of lateral ventricle:** is present in the floor of the **body** (derived from the **posterior choroidal artery**) and in the medial wall of **inferior** horn (derived from the **anterior choroidal artery**).

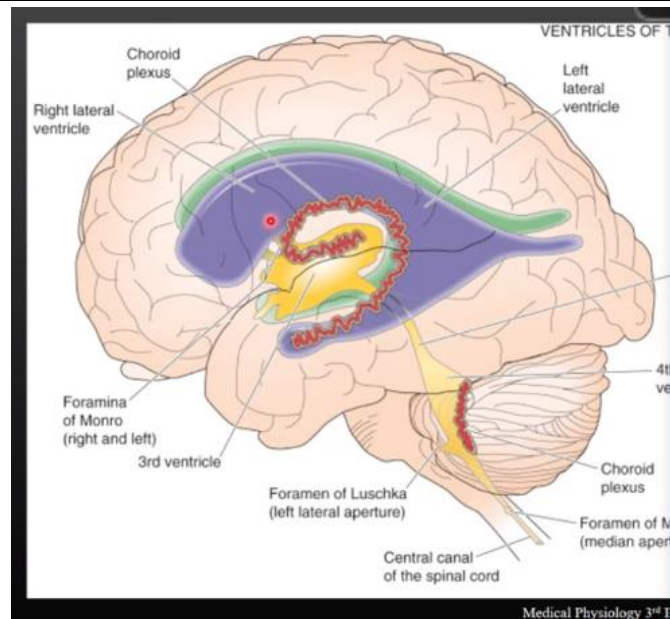


❖ **N.B: Choroidal fissure** is the curved interval on the medial surface of the cerebral hemisphere between the fornix and the thalamus as well as between the fimbria and the roof of the inferior horn of the lateral ventricle. It transmits the tela choroidea of the lateral ventricle containing the choroidal plexus to secrete CSF.

Coronal section, Boundaries & Relations of Inf. Horn of Lat. Ventricle



Floor of Inf. Horn Seen from Above

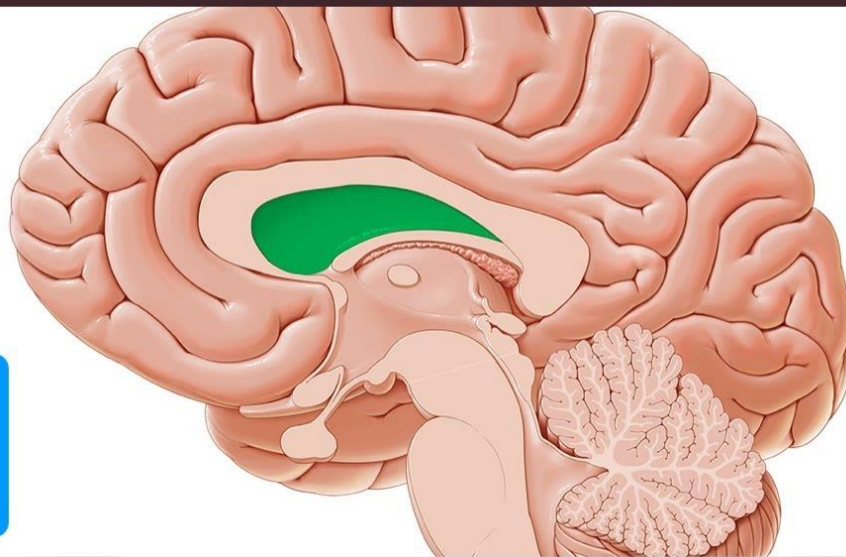


### The Septum Pellucidum (Lucidum)

- ★ **It is a vertical sheet, consisting of gray and white matter, which occupies the interval between the fornix and the corpus callosum.**
- ★ **It consists of two layers, with a slit-like cavity in between.**
- ★ **As a whole, the septum pellucidum forms a partition between the anterior horns and the central parts of the 2 lateral ventricles.**



## Septum pellucidum



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