

CNS

Anatomy

0 slides

0 sheets

▶ number

15

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Slide 3(until page 16)
Record of section 1

The ventricular system:

From wiki:

The ventricular system is a set of four interconnected cavities (**ventricles**) in the **brain**, where the cerebrospinal fluid (CSF) is produced. Within each **ventricle** is a region of choroid plexus, a network of ependymal cells involved in the production of CSF.

First we will start with the biggest one which is the lateral ventricle:

What is the septum that close the lateral ventricle →

1-septum pellucidum → link upper border of the **fornix** with the corpus callosum.

The fornix is coming from the axons of fimbria of the hippocampus and forms an arch over the **thalamus**. in sagittal section, It is located on the medial aspects of the cerebral hemispheres.)

Its divided to **anterior column,body,posterior column or (crura)**

Body of the two fornices is connected by fornix (hippocampal) commissure.

The cavities of the lateral ventricle:

1-Anterior horn (frontal horn)

2- Posterior horn occipital I horn)

3-Inferior horn (temporal horn)

4-the body of the lateral ven. In the (partial lobe)

If we take an imaginary line from the interventricular foramen (foramen of monro) which is located in front of the thalamus to the midpoint body of corpus callosum.

Anterior to this line → anterior horn or frontal horn
Posterior to this line until the splenum of **corpus callosum** → the body)

Behind the splenum → posterior horn of the lateral ventricle
But where is the inferior horn?? As we said in the temporal lobe.

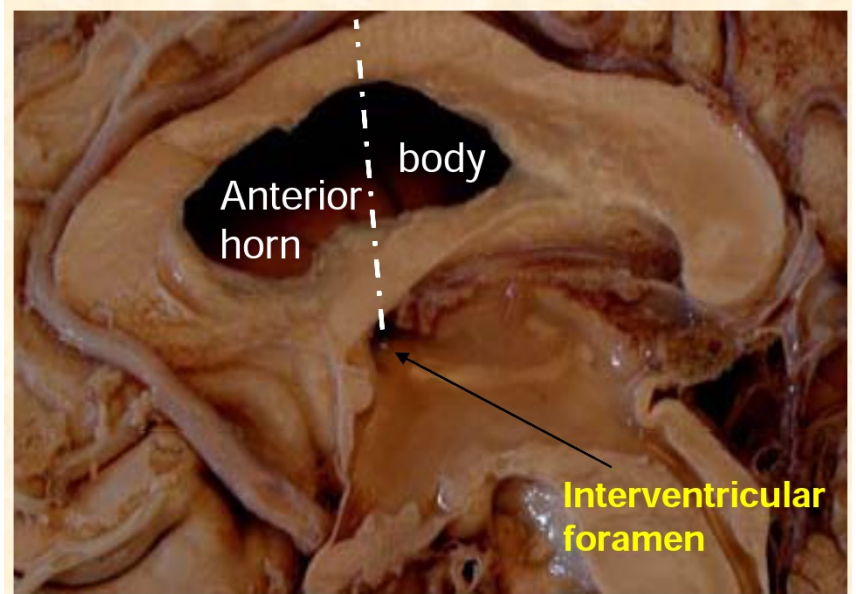
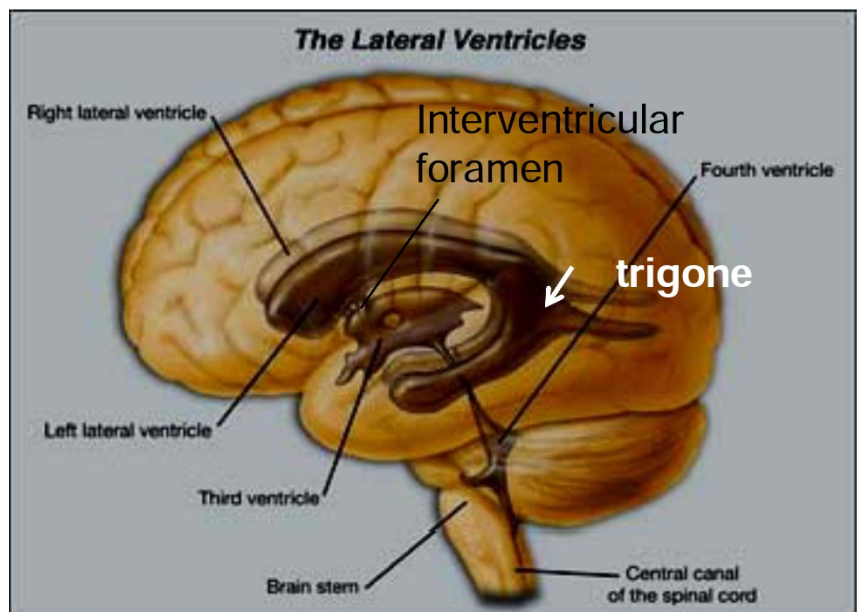
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Note: The only connection between the lateral and 3rd ventricle is the interventricular foramen

Trigon of the lateral vent. :

The most posterior part of the body of the L.V at the junction of inferior and posterior horns
Contains the glomus (choroid plexus tuft)

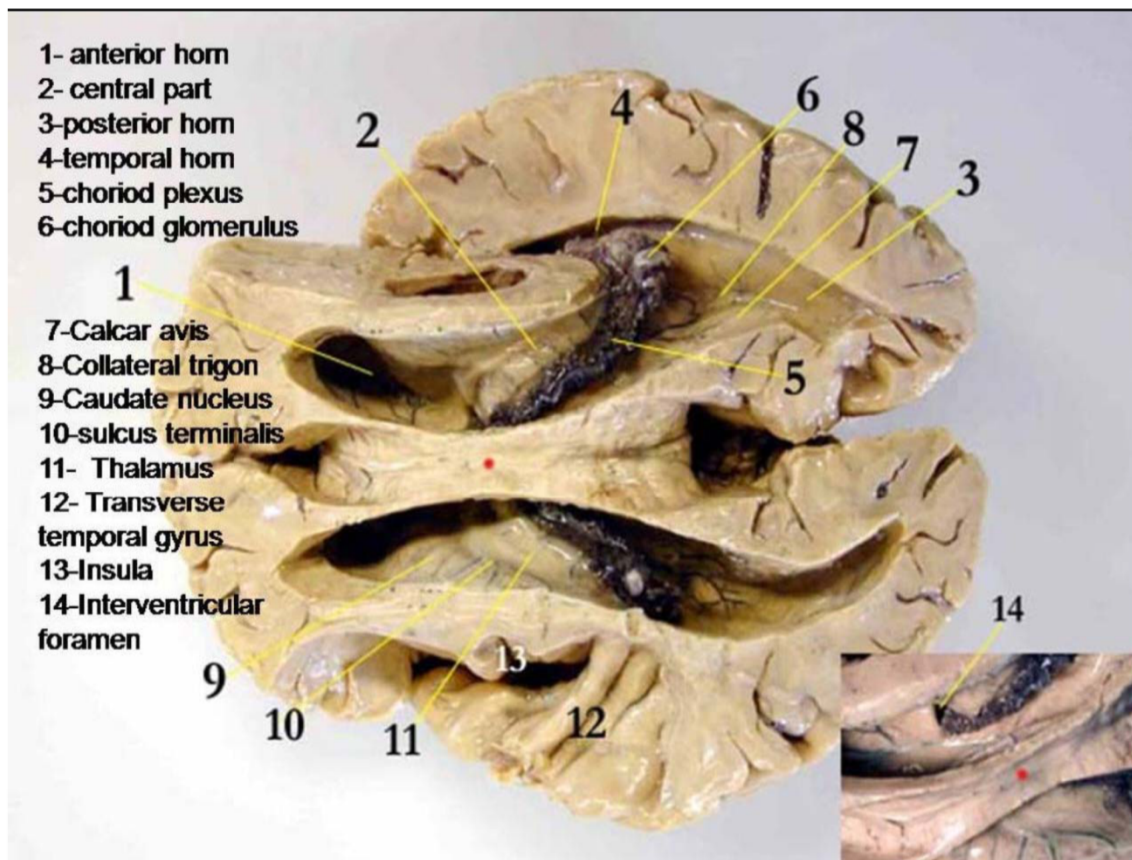
Choroid plexus → it is a tuft of capillaries covered by ependyma → a layer from pia matter lining the



ventricle, And the covers the choroid plexus.

- Ependyma is the thin neuroepithelial lining of the ventricular system of the brain and the central canal of the spinal cord, made up of ependymal cells.

The choroid plexus is responsible for all the blood supply of the ventricle We have another 2 plexuses in the 3rd and 4th ventricles .



Superior view for the L.V:

Notes all the flowing

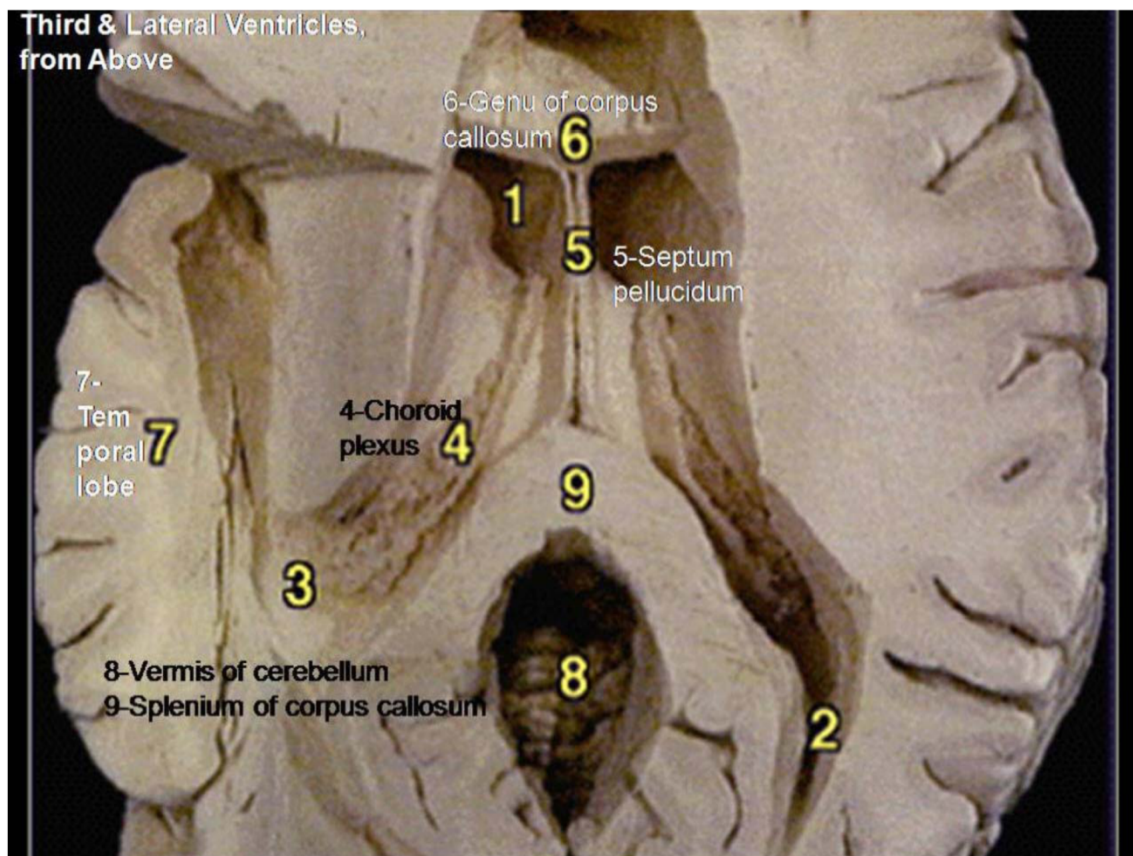
Number 1,2,3,4,,8, are representing different parts of lateral ventricle. the red point which is the corpus callosum

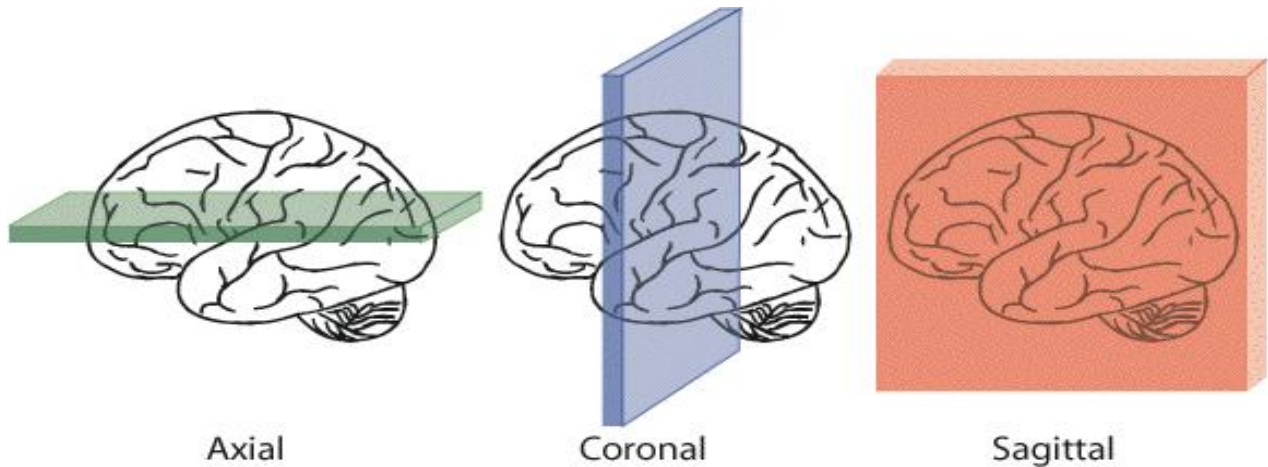
Important note:

The choroid plexus enters the lateral ventricle from its medial wall and it's medially related to it

Number 5,6,11

Note → above 9 is the 3rd ventricle opening





Stolen from:

http://users.fmrib.ox.ac.uk/~stuart/thesis/chapter_3/section3_2.html

The relations to the body of the lateral ventricle

When the brain stem appear in a coronal section it is most likely taken in the body of L.V

The roof → body of corpus callosum

The floor → body of caudate nucleus medial to it ,the thalamus

(body is related to body related to body)

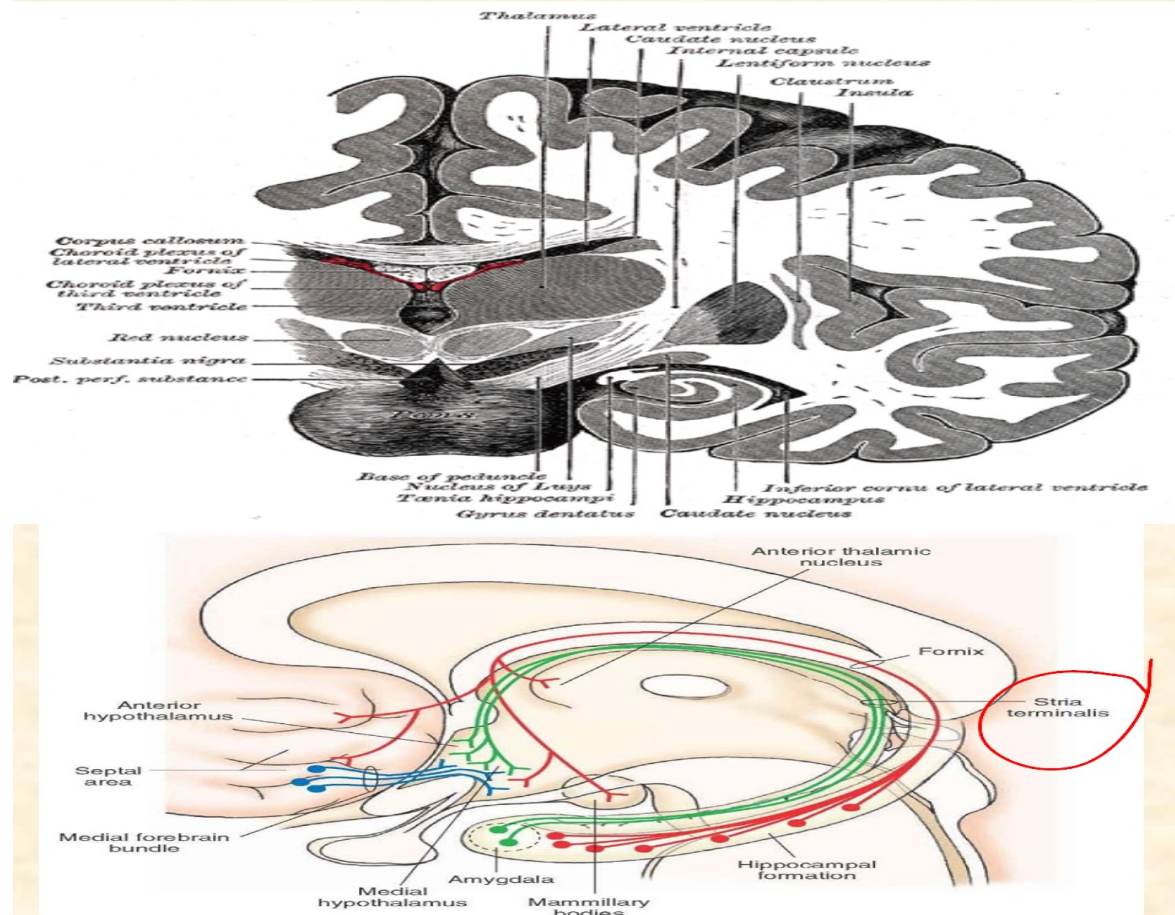
Medial wall → septum pellucidum and the body of fornix

More about stria terminalis:

Start from the amygdala and ascend in the upper border of the thalamus joining the hypothalamus

The arching fibers will be between the thalamus and caudate N. that's why you will see the stria terminalis in the floor of the L.V.

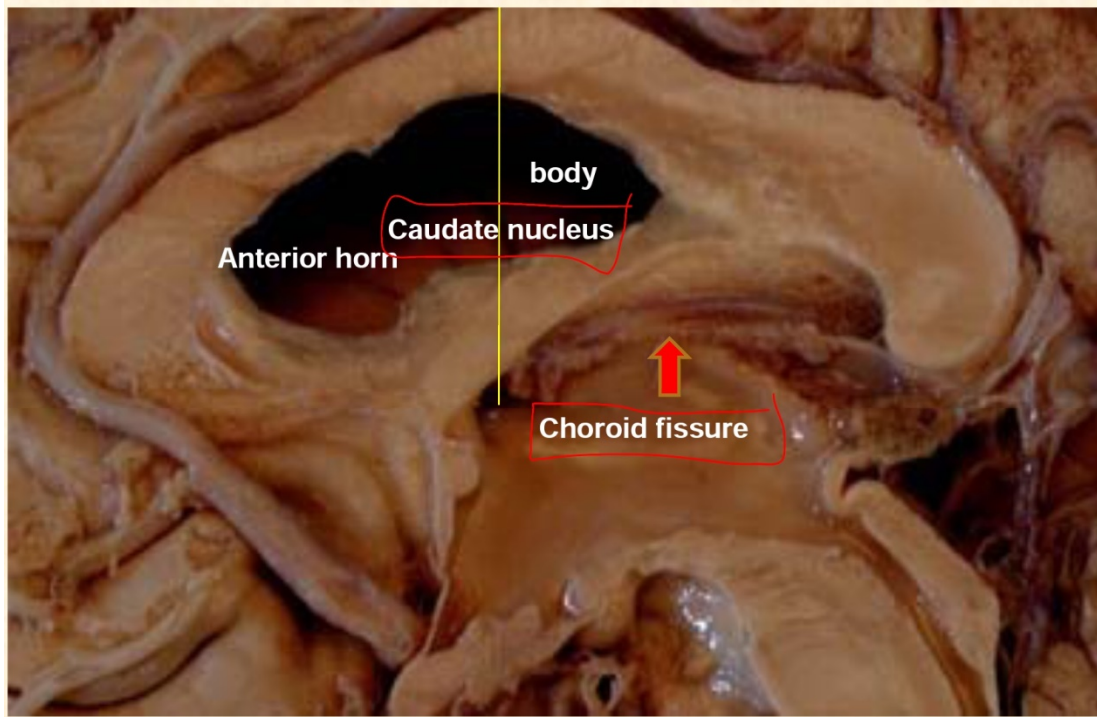
What is the function of this connection between the amygdala and the hypothalamus??? To connected the olfaction with the hypothalamus
 When you smell a tasty food → the **stria terminalis** will send signal to the hypothalamus → secretion of saliva and induce gastric motility



The shadow seen in the picture below is for the body of caudate N.
 The relation of the head of caudate N. to the anterior horn → lateral wall of it
 From the outside we can see a fissure (**choroid fissure**) which lies between the thalamus and the fornix
 This fissure is the entrance of the choroid plexus to the cavity of the lateral ventricle, which is formed by the **posterior choroidal and anterior choroidal arteries**

Relations of lateral ventricle

Sagetal section



Don't forget the choroid plexus gives the blood supply to the ventricle. After age 40 in normal situations, the choroid plexus in the trigone of the lateral ventricle will calcify and appear as white spots in the CT scan (the glomus).

Relations of anterior horn of lateral ventricle:

The coronal section is taken in the more anterior part of the brain (the cut in the frontal lobe only).

The anterior horn of the L.V:

Roof : genu of the Corpus callosum

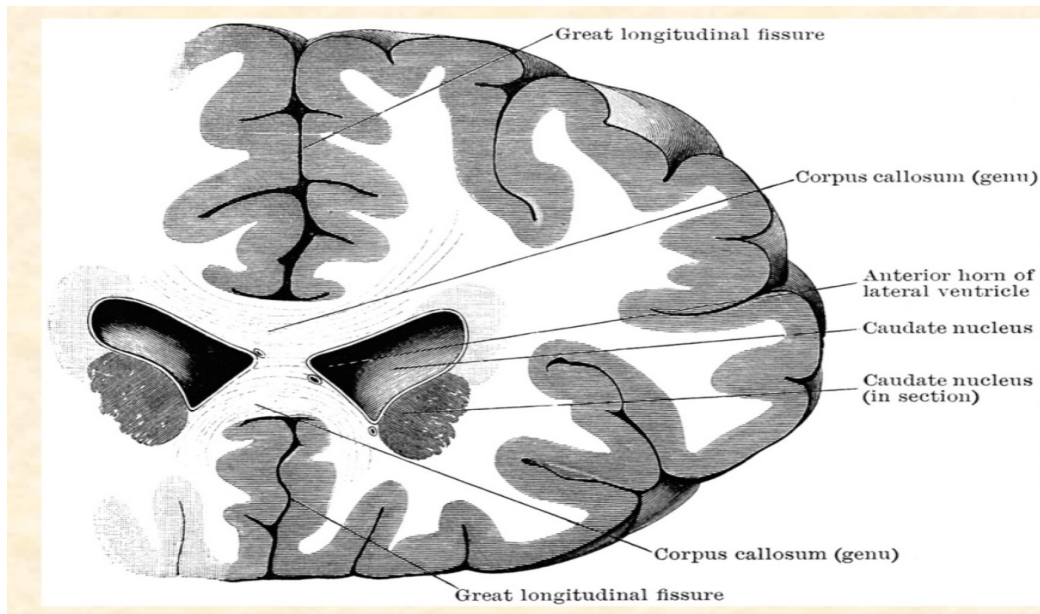
Floor and lateral wall: Head of Caudate Nucleus (making a bulge)

Medial wall:

Rostrum of corpus callosum

Septum Pellucidum

Anterior column of the Fornix



Relations of Posterior horn of the lateral ventricle:

The posterior horn is in the occipital lobe

Relations :

- 1-The calcarine sulcus begins near the occipital pole the visual area is represented on the limb of the calcarine sulcus (area 17) sheet 11.
- 2- parieto-occipital fissure

The calcarine sulcus make an elevation in the posterior horn forming the **calcar avis** on the medial wall of the posterior horn.

Also the splenium of corpus callosum form a bulge in the wall of the posterior horn called the (**bulb**).

So the Medial wall: two convexities:

Upper (bulb of the posterior horn) from the Splenium of the corpus callosum (bulb)

Lower (posteriorly) (Calcar avis)

From Calcarine sulcus.

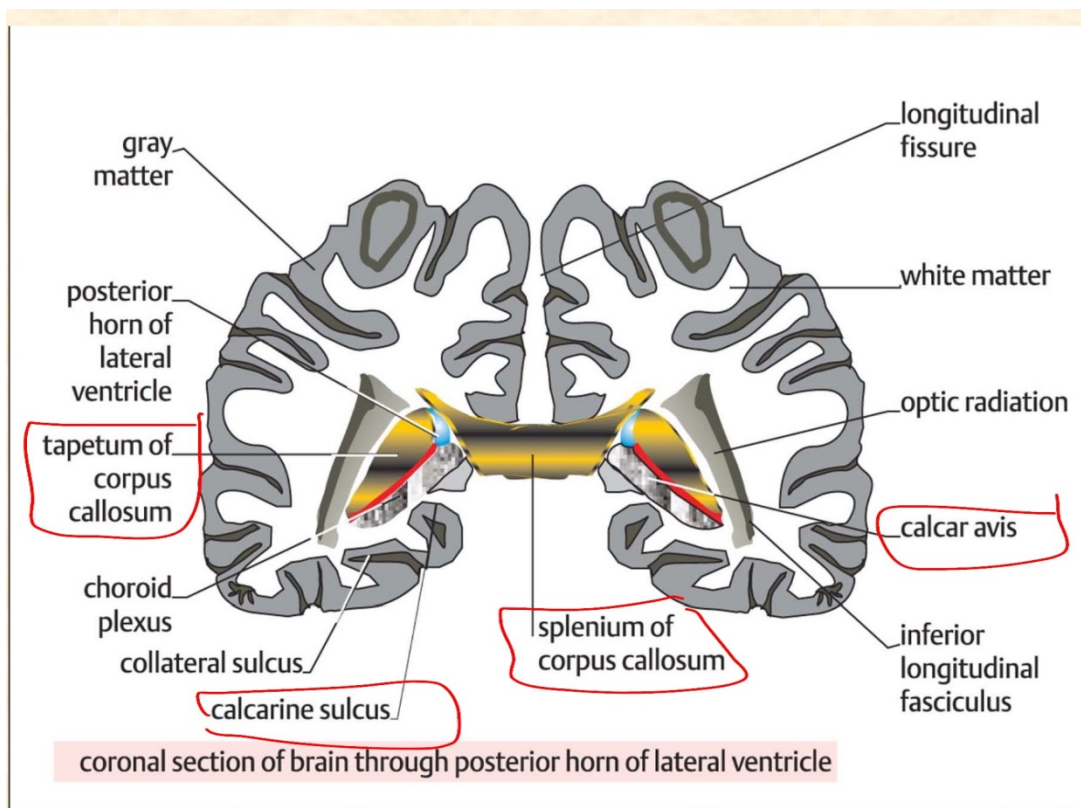
If Calcar avis is well developed, it obliterates the posterior horn.

•Roof and lateral wall

Tapetum of the corpus callosum
Optic radiation lying against the

tapetum in the lateral wall.

What is the **tapetum** → fibers extending from the body of corpus callosum to the parietal lobe and temporal lobe.



Relations of Inferior horn of the lateral ventricle:

Last10 min

•Roof

Tail of the caudate nucleus, amygdaloid body

•Lateral wall

Tapetum of corpus callosum

•Floor

medially

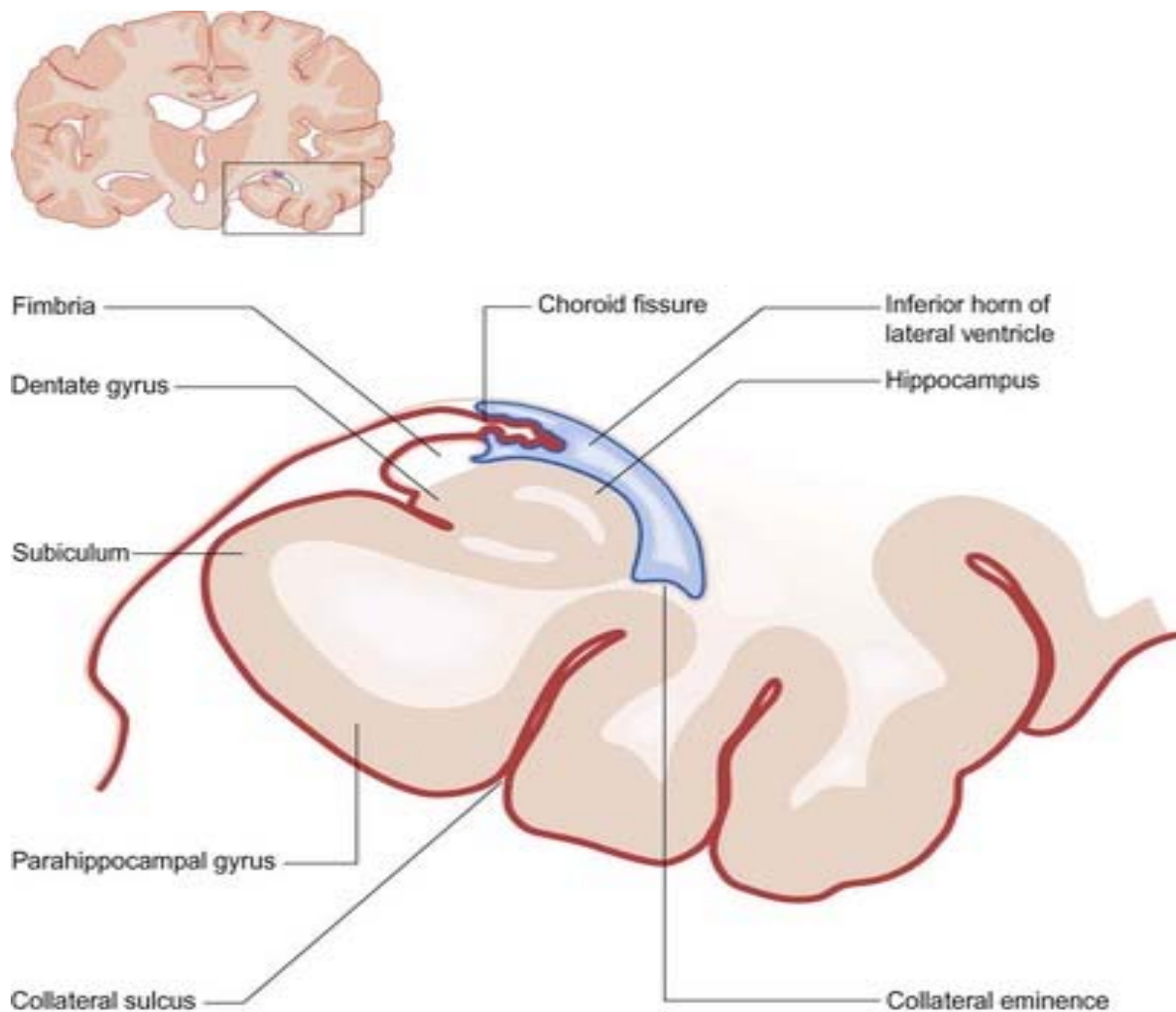
- hippocampus

laterally

- collateral eminence (by collateral fissure)

Here also the collateral sulcus posing the floor of the inferior horn forming the collateral **eminence**.

Lower part of choroid plexus enter this horn from the temporal part of the choroid fissure.



Choroid plexus of Lateral Ventricle

Formed by posterior choroid branch of PCA (body) and anterior choroid branch of ICA → internal carotid artery (inferior horn)

It is a tuft of capillaries invaginating the cavity of the lateral ventricle or the roof of the 3rd ventricle

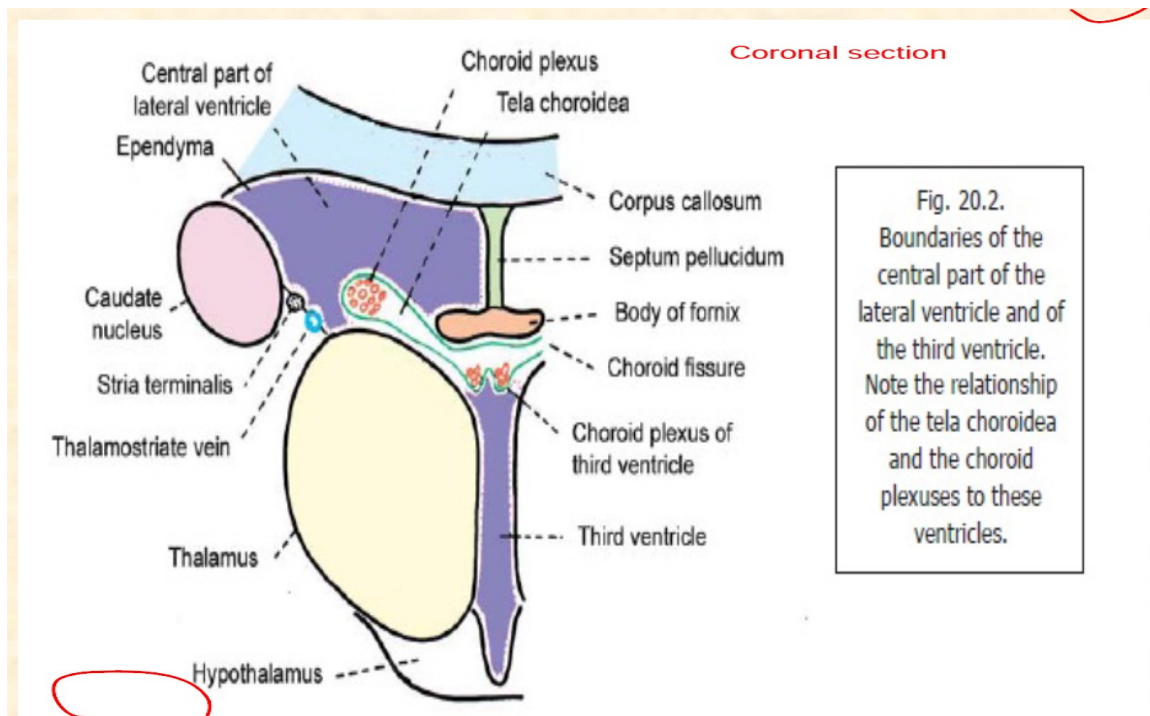
In the dawn below picture you have a half of Coronal section we can see only one cavity of the lateral ventricle and the 3rd ventricle between the 2 thalami

In the roof of the 3rd ventricle and the medial wall of the lateral the pia matter forming a double layer inside it the choroid plexus and this structure is called **tela choroidea**.

Anatomical localization of the tela choroidea??

Enter from the medial wall of the L.V

And from the roof of the 3rd V and 4th V



From the slides:

1. Choroid plexus projects into the lateral ventricles on its **medial aspect**
2. Composed of **pia matter** covered with ependymal lining of the ventricle.

3. Choroid plexus is made of **tela choroidea** (two layers of pia matter).
4. Lies between **fornix** superiorly and **thalamus** inferiorly.
5. Situated in **the inferior horn** of the lateral ventricle. Projects into the **choroid fissure**

How to know the anterior from the posterior part???

The longitudinal fissure shorter anteriorly. (# 9)



Key to MRI:

1. anterior horn of lateral ventricle
2. posterior horn of lateral ventricle
3. septum pellucidum
4. head of caudate nucleus
5. internal capsule
6. lentiform nucleus
7. thalamus
8. 3rd ventricle
9. longitudinal fissure
10. corpus callosum
11. superior sagittal sinus

Ventricles of the Brain

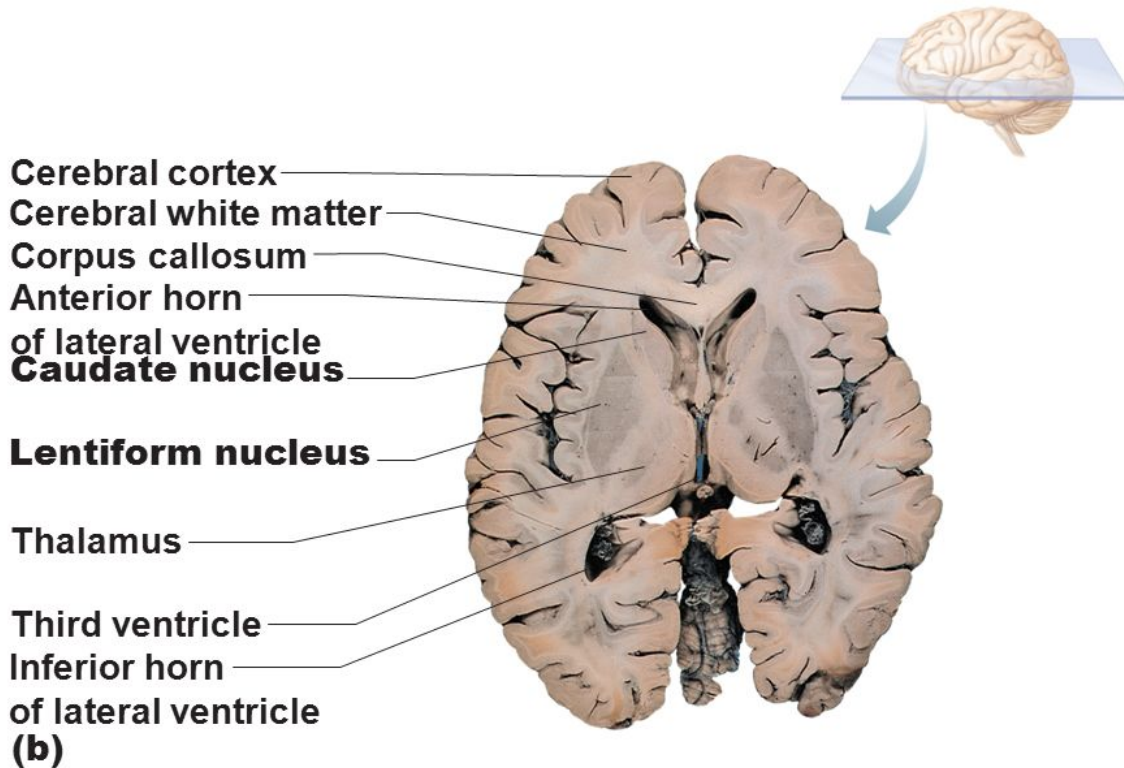
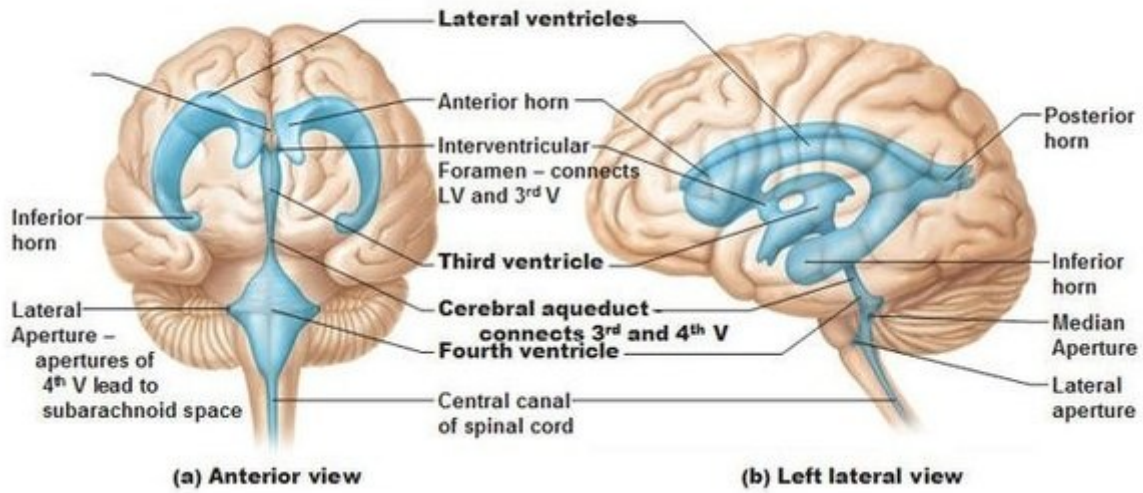


Figure 12.11b (2 of 2)

Very important picture:

You can see the cavity of the 3rd ventricle, the fornix, cavity of septum pellucidum and many other structures

