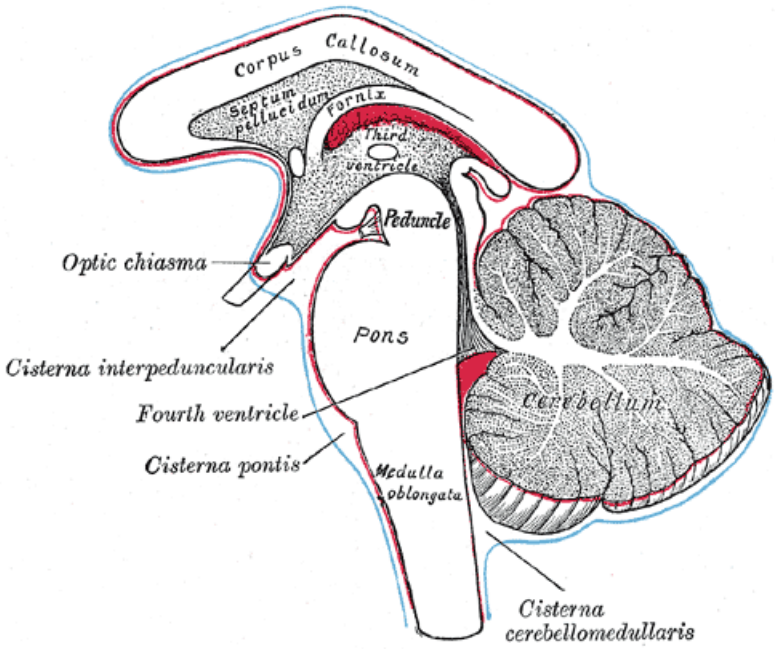
Fourth ventricle



Knowledge of anatomy of the IV ventricle is basic to surgical approach of any kind of lesion in its compartment as well as for those located in its neighborhood.

It is one of the four connected fluid-filled cavities within the human brain. These cavities, known collectively as the ventricular system.

The fourth ventricle extends from the cerebral aqueduct (aqueduct of Sylvius) to the obex, and is filled with cerebrospinal fluid (CSF).

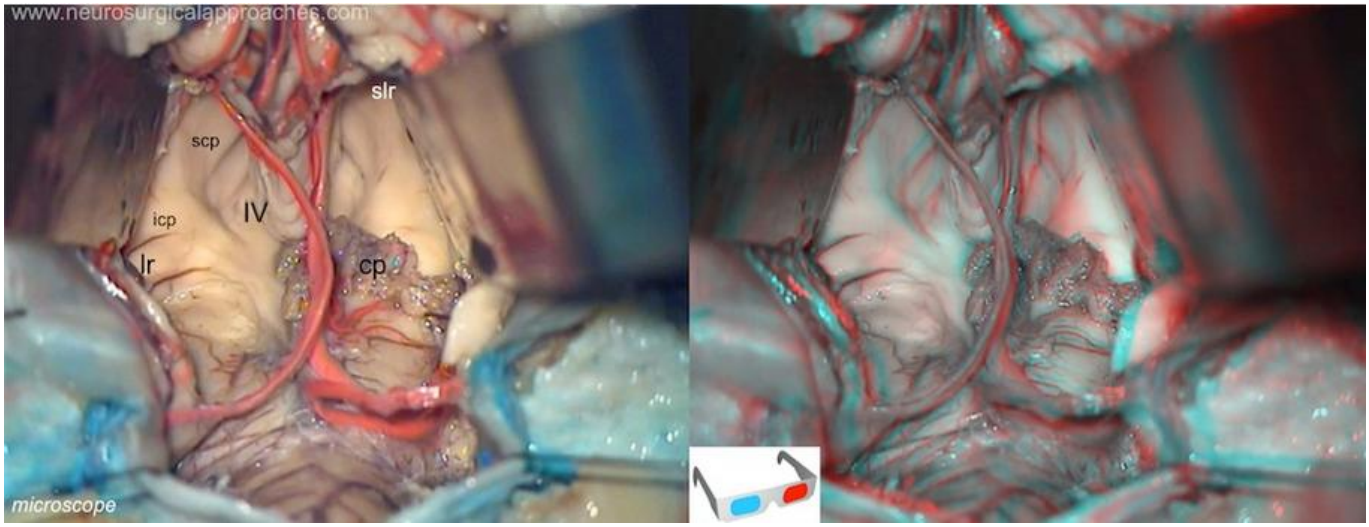
The fourth ventricle has a characteristic diamond shape in cross-sections of the human brain. It is located within the pons or in the upper part of the medulla. CSF entering the fourth ventricle through the cerebral aqueduct can exit to the subarachnoid space of the spinal cord through two lateral foramina of Luschka (singular: foramen of Luschka) and a single, midline foramen of Magendie.

Cerebrospinal fluid (CSF) pathway studies have revealed that the CSF secreted from the choroid plexus of the ventricles after egressing from the fourth ventricle reaches the basal suprasellar cistern and ultimately the sylvian cisterns.

It has an anteroinferior wall or floor, consisting of the pons and bulb, and a posterior superior wall or roof, which ends in a point at the level of the fastigium or posterior recess, consisting of the cerebellum and the posterior choroid tissue [1)]

The IV ventricle in a midline sagittal cut shows a tent-shaped cavity with its roofs pointing posteriorly and the floor formed by the pons and the medulla. The superior roof is formed by the superior cerebellar peduncles laterally and the superior medullary velum on the midline. The inferior roof is formed by the tela chorioidea, the velum medullary inferior, and the nodule. The floor of the IV

ventricle has a rhomboid shape. The rostral two thirds are related to the pons, and the caudal one third is posterior to the medulla. The median sulcus divides the floor in symmetrical halves. The sulcus limitans runs laterally to the median sulcus, and the area between the two sulci is called the median eminence. The median eminence contains rounded prominence related to the cranial nucleus of facial, hypoglossal, and vagal nerves. The lateral recesses are extensions of the IV ventricle that opens into the cerebellopontine cistern. The cerebellomedullary fissure is a space between the cerebellum and the medulla and can be used as a surgical corridor to the IV ventricle [2].



Fourth ventricle floor

Fourth ventricle floor

Pathology

see Trapped fourth ventricle.

Fourth ventricle tumor

Fourth ventricle hematoma

Fourth ventricle arachnoid cyst

Approaches

see Fourth ventricle approaches.

1)
Fontana H, Belziti H, Requejo F, Recchia M. Buratti S. Los recesos del IV ventrículo. Rev Argent Neuroc. 2006; 20:101-13.
2)
Mussi AC, Matushita H, Andrade FG, Rhoton AL. Surgical approaches to IV ventricle–anatomical study. Childs Nerv Syst. 2015 Oct;31(10):1807-14. doi: 10.1007/s00381-015-2809-0. Epub 2015 Sep 9.

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