Third ventricle cavernous malformation surgery

The surgical removal of a cavernous malformation in the third ventricle of the brain is a complex procedure that may involve removing part of the skull to access the brain and/or disconnecting certain brain regions. The choice of surgical technique will depend on the location and size of the malformation, as well as the patient's age and general health. Some common surgical techniques include:

Craniotomy: involves removing a portion of the skull to access the brain and remove the malformation

Endoscopic third ventriculostomy (ETV): involves using an endoscope to drain fluid from the third ventricle and remove the malformation

Stereotactic radiosurgery: uses highly focused radiation to destroy the malformation without the need for open surgery.

The surgical approaches adopted should be aimed at providing the best access to the site where the malformation has arisen. The translamina terminalis approach for cavernous malformations in the suprachiasmatic region, the transventricular or transcallosal interfornicial approaches for those in the foramen of Monro region and the transvelum interpositum approach for those in the lateral wall or the floor of the third ventricle appear to be appropriate. In order to select the adequate surgical approach, precise diagnosis of the site of origin is crucial. In addition to neuroimaging techniques, the patient's initial symptoms provide valuable information ¹⁾.

Videos

A 58-year-old female patient accessed the Emergency Department complaining of headache, vomiting, mental confusion, and syncopal episodes for the past 3 days. An urgent brain computed tomography scan revealed a hemorrhagic lesion of the third ventricle, conditioning triventricular hydrocephalus, so an external ventricular drainage (EVD) was placed in an emergency setting. An magnetic resonance imaging (MRI) showed a 10 mm diameter hemorrhagic cavernous malformation originating from the superior tectal plate. An ETVA was performed for the cavernoma resection, followed by an endoscopic third ventriculostomy. After proving shunt independence, the EVD was removed. No clinical nor radiological complications were assisted in the postoperative period, so the patient was discharged 7 days after. The histopathological examination was consistent with cavernous malformation. An immediate postoperative MRI showed GTR of the cavernoma with a little clot around the surgical cavity, which appeared completely reabsorbed 4 months later.

ETVA provides a straight corridor to the third ventricle, excellent visualization of the relevant anatomical structures, safe resection of the lesion, and treatment of the concomitant hydrocephalus by ETV 2 .

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9990790/

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The anterior interhemispheric approach is a workhorse for treatment of lesions in the third ventricle. In this case, Martirosyan et al., demonstrate the utility of this approach for resecting a complex third ventricular cavernous malformation. They discuss patient positioning, optimal location of the craniotomy, and surgical resection techniques for safe removal of these lesions. They also demonstrate the importance of gravity retraction using the falx to prevent injury to the dominant frontal lobe. The video can be found here: https://youtu.be/38woc28er7M³⁾.

Endoscopic Endonasal Translamina Terminalis Approach for Resection of Hemorrhaged Third Ventricle Cavernous Hemangioma⁴⁾.

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