Interhemispheric Transcallosal Transchoroidal Approach

- Endoscopic approaches to the posterior wall of the third ventricle: An anatomical comparison
- Transcallosal Retroforniceal Transchoroidal Approach: To the Posterior Third Ventricle and Beyond
- Contralateral interhemispheric transcallosal transchoroidal approach to a thalamic glioma: illustrative case
- Septostomy and Monroplasty in Isolated Lateral Ventricle After Removal of a Third Ventricle Colloid Cyst: 2-Dimensional Operative Video
- Transcallosal-Transchoroidal Fissure Approach for Midbrain and Thalamic Cavernous Malformations: 2-Dimensional Operative Video
- Anatomical step-by-step dissection of common approaches to the third ventricle for trainees: surgical anatomy of the anterior transcortical and interhemispheric transcallosal approaches, surgical principles, and illustrative pediatric cases
- Thalamomesencephalic cavernoma: anterior transcallosal transchoroidal approach
- Interhemispheric transcallosal transchoroidal approach to a pineal teratoma in a 15-year-old boy

Key points

1. The transchoroidal approach is a versatile approach to access lesions situated within the third ventricle predominantly behind the foramen of Monro.

2. The anatomy of the bridging veins should be studied to plan a safe and adequate craniotomy.

3. Neuronavigation could be helpful in estimating the positions of the venous structures in the approach and the ideal trajectory to the lesion in order to perform an adequate placed callosotomy.

4. The anatomy of the lesion in relation to the anatomy of the deep venous system, namely the septal, thalamostriate vein and internal cerebral veins should be carefully analyzed on the pre-operative MRI.

5. The pre-operative MRI along with DTI should be analyzed to estimate the displacement of important projection fibers in relation to the lesion.

6. Great respect needs to be given to all the venous structures and any sacrifice of a vein should be made with caution.

7. The complications related to the thalamostriate vein and its branches occur much less frequently when compared to the subchoroidal approach.

8. The thalamo-geniculate and thalamo-perforating arteries should be carefully preserved during perilesional dissection.

9. Post-resection external ventricular drainage can be helpful in avoiding early postoperative hydrocephalus.

10. In cases of diencephalic-mesencephalic lesions, steroids could be helpful in reducing edema in the early postoperative period [1].

It is a subtype of Interhemispheric approach.

This approach consists of opening the taenia fornicis of the choroidal fissure in the body of the lateral ventricle and approaching the third ventricle between the two internal cerebral veins. This route allows further posterior enlargement of the foramen of Monro without sacrificing any neural structures. When necessary, the anterior septal vein can be sacrificed.

Twenty adult cadaveric brains and four adult cadaveric heads were studied, using a magnification ranging from 3 times to 40 times, after perfusion of the arteries and veins with colored latex.

The choroidal fissure is a natural cleft between the thalamus and the fornix, and it is identified by following the choroid plexus in the lateral ventricle. The choroid plexus in the body of the lateral ventricle originates from the tela choroidea of the roof of the third ventricle and is apparently attached to the fornix by the taenia fornicis and to the thalamus by the taenia choroidea. The taenia is actually the ependyma that covers the internal wall of the ventricular cavity and the choroid plexus.

An understanding of the choroidal fissure is fundamental for use of the transchoroidal approach. Unlike transforaminal, subchoroidal, subforniceal, and interforniceal approaches to the third ventricle, which sacrifice some neural or vascular structures, the transchoroidal approach follows a natural route, and certainly it is one of the options to be considered when entry into the third ventricle is required [2].

see Transtemporal transchoroidal fissure approach

Ito et al demonstrate an interhemispheric transchoroidal approach for third ventricular teratoma resection. Interhemispheric dissection exposed the corpus callosum at a length of about 2 cm. A callosotomy was made to enter into the right lateral ventricle. After septal vein ligation, dissection was made of the space between the right fornix and right internal cerebral vein (ICV); thus bilateral fornix and left ICV would be retracted to the left; right choroid plexus, right ICV to the right. By this transchoroidal approach, the foramen of Monro was extended posteriorly, providing enough of a surgical corridor to resect a posteriorly located third ventricular tumor. The video can be found here: https://youtu.be/gIzPiH3zx_o [3].

<html><iframe width="560" height="315" src="https://www.youtube.com/embed/gIzPiH3zx_o" frameborder="0" allow="accelerometer; autoplay; encrypted-media; gyroscope; picture-in-picture" allowfullscreen></iframe></html>

Interhemispheric transcallosal route for resection of anterior third ventricular lesions

<html><iframe width="560" height="315" src="https://www.youtube.com/embed/KzC8QYsTKeg" frameborder="0" allow="accelerometer; autoplay; encrypted-media; gyroscope; picture-in-picture" allowfullscreen></iframe></html>

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References

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3)

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