



Video Abstract

Trascallosal bilateral transforaminal resection of a solid partially calcified colloid cyst: 2D operative video

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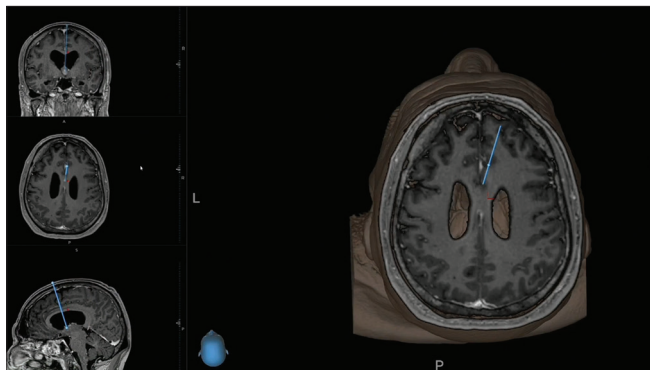
ABSTRACT

Background: Colloid cysts are benign lesions of the roof of the third ventricle, often diagnosed incidentally; sometimes they can cause hydrocephalus due to obstruction of the foramina of Monroe. Symptomatic cysts could be resected either microsurgically (transcallosal or transcortical) or endoscopically. Although both strategies are effective and have advantages and disadvantages, there is no consensus on the choice of the optimal approach. Transcallosal resection, although more invasive than endoscopy, allows adequate bimanual manipulation of the cyst and is associated with high rates of complete resection, the use of neuronavigator and intraoperative ultrasound optimizes surgical trajectory and improves safety of the procedure with complication rates comparable to endoscopy. Endoscopy is less invasive but complete resection of solid cysts can be challenging.

Case Description: In Video 1, we show resection of a solid partially calcified colloid cyst using a transcallosal bilateral transforaminal approach to anterior third ventricle male, 65 years old; headache and mild memory impairment for 6 months; admitted at our emergency department because of a brief loss of consciousness. Neurologic examination was normal. Computed tomography (CT) and magnetic resonance imaging (MRI) showed a colloid cyst at the level of anterior third of the third ventricle (1.5 cm in diameter) with hypointense appearance in T2 sequences suggesting a solid calcific component. The ventricular system was enlarged. Colloid cyst risk score 3/5 (diameter >0.7 cm, headache, risk zone I) considered an intermediate-risk subgroup according to Alford *et al.* On this basis, we proposed the surgical treatment. We chose a transcallosal microsurgical resection. The patient gave consent for the procedure. A preoperative planning with a computer-generated 3D model is performed to simulate the approach. Craniotomy, interhemispheric dissection, and callosotomy were planned with the neuronavigator and with the aid of intraoperative ultrasound to optimize the trajectory and perform a limited and tailored callosotomy. The 1.5 cm callosotomy allows to approach both lateral ventricles, the cyst was progressively dissected working bilaterally through both foramina of Monroe without injuries of the fornices. Resection at term is complete. Postoperative MRI and CT scan confirmed complete excision without complications; the patient was discharged after a week in good neurological condition with complete regression of headache.

Conclusion: Microscopic transcallosal resection of the colloid cyst of the third ventricle allows for complete resection with low complication rates. The use of preoperative 3D planning and integrated neuronavigation with intraoperative ultrasound helps to reduce invasiveness.

Keywords: Colloid cyst, Microneurosurgery, Third ventricle tumor, Transcallosal approach



Video 1: The transcallosal bilateral transforaminal resection of a third ventricle solid colloid cyst. Preoperative planning and simulation and intraoperative neuronavigation and intraoperative ultrasound were used to plan trajectory and to obtain a tailored limited callosotomy. Postoperative computed tomography and magnetic resonance imaging are also showed to confirm total resection.

[Video 1]-Available on:
www.surgicalneurologyint.com

Annotations^[1-11]

- 1) 00:05 – Case presentation.
- 2) 00:15 – Preoperative neuroimaging (CT and MRI).
- 3) 00:50 – Decision-making.
- 4) 01:03 – Surgical planning and preoperative virtual simulation.
- 5) 01:28 – Interemispheric approach.
- 6) 01:44 – Callosotomy and bilateral approach to lateral ventricles.
- 7) 02:10 – Progressive dissection and resection (bilateral transforaminal route to third ventricle).
- 8) 04:25 – Third ventricle after resection.
- 9) 04:50 – Postoperative course.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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