



Image Report

Interhemispheric arachnoid cyst

Abdulrahman Albakr^{1,2}, Nicholas Sader¹, Sanju Lama^{1,3,4}, Garnette R Sutherland^{1,3,4}

¹Department of Clinical Neurosciences, Cumming School of Medicine, University of Calgary, Calgary, Canada, ²Department of Surgery, Division of Neurosurgery, College of Medicine, King Saud University, Riyadh, Saudi Arabia, ³Department of Clinical Neurosciences, Hotchkiss Brain Institute, ⁴Department of Clinical Neurosciences, Arnie Charbonneau Cancer Institute, University of Calgary, Calgary, Canada.

E-mail: *Abdulrahman Albakr - dr.aalbakr@gmail.com; Nicholas Sader - nicksader8@gmail.com; Sanju Lama - slama@ucalgary.ca; Garnette R. Sutherland - garnette@ucalgary.ca



*Corresponding author:

Garnette Sutherland,
Department of Neurosurgery,
University of Calgary,
Calgary, Canada.

garnette@ucalgary.ca

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ABSTRACT

Background: Interhemispheric arachnoid cysts are uncommon and typically associated with other midline neurodevelopmental disorders, such as complete or partial agenesis of the corpus callosum.

Case Description: We report a case of a 27-year-old woman with worsening headache, memory deficit, and radiological progression of an interhemispheric arachnoid cyst. The treatment consisted of craniotomy for interhemispheric cyst fenestration into both the interhemispheric cistern and lateral ventricle. The postoperative course was unremarkable, with considerable clinical improvement and significant reduction in cyst size.

Conclusion: We successfully treat a patient with an enlarging arachnoid cyst and associated progressive symptoms with microsurgical fenestration.

Keywords: Arachnoid cyst, Corpus callosum, Interhemispheric fissure, Microsurgery

INTRODUCTION

Intracranial arachnoid cysts classically involve the middle cranial fossa.^[5] Interhemispheric arachnoid cysts are uncommon, with only a few cases reported.^[1,2,5,16] In children, interhemispheric arachnoid cysts are typically associated with other midline neurodevelopmental disorders, such as complete or partial agenesis of the corpus callosum.^[2] While these cysts are sporadically seen in adults, they are usually identified in children.^[13] To the best of our knowledge, only 20 cases of interhemispheric arachnoid cysts have been reported in adults.^[1,3,6-12,14-16] Several management options have been described, including stereotactic aspiration, fenestration, cystocisternostomy, and placement of cystoperitoneal shunt.^[2] Microsurgical and endoscopic fenestration are widely performed, which allow avoidance of cerebrospinal fluid (CSF) shunting along with its possible failure and related complications.^[2]

Here, we report a case of a large interhemispheric arachnoid cyst successfully treated with microsurgical fenestration.

CASE PRESENTATION

A 27-year-old woman was referred to our neurosurgical clinic in early 2019 with worsening headache and short-term memory deficit. Neurological examination revealed no mental status or cranial nerve abnormalities. She was previously diagnosed with a primary interhemispheric

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arachnoid cyst in 2012 following syncope. At that time, the cyst was small and presumed incidental. The most recent brain magnetic resonance imaging (MRI) scan showed a large interhemispheric arachnoid cyst with partial agenesis of the corpus callosum. The lesion had grown significantly compared to her initial MRI study, with associated ventriculomegaly [Figure 1a-c]. Management options that included ongoing observation and endoscopic or microsurgical fenestration were discussed. Microsurgical management was preferred to avoid any untoward injury associated with placement or manipulation of an endoscope. Through a right frontal craniotomy, the arachnoid cyst was incised and fenestrated into both the interhemispheric cistern and lateral ventricle [Figure 1d-h and Video 1]. The postoperative recovery was unremarkable.

At the follow-up visit 3 months later, she reported substantial improvement in her headache and memory issues. A follow-up MRI scan 5 months after the surgery demonstrated successful surgical decompression with a decrease in cyst and ventricle size [Figure 1i]. Given the decrease in ventricular size and the patient's clinical improvement, we assumed that CSF flow dynamics were re-established. While early follow-up imaging did not include CSF flow studies, these have been planned to be included in subsequent studies.

DISCUSSION

Interhemispheric fissure arachnoid cysts are uncommon congenital abnormalities, and only a few cases have been reported.^[1,2,5,16] Of 696 incidentally discovered arachnoid

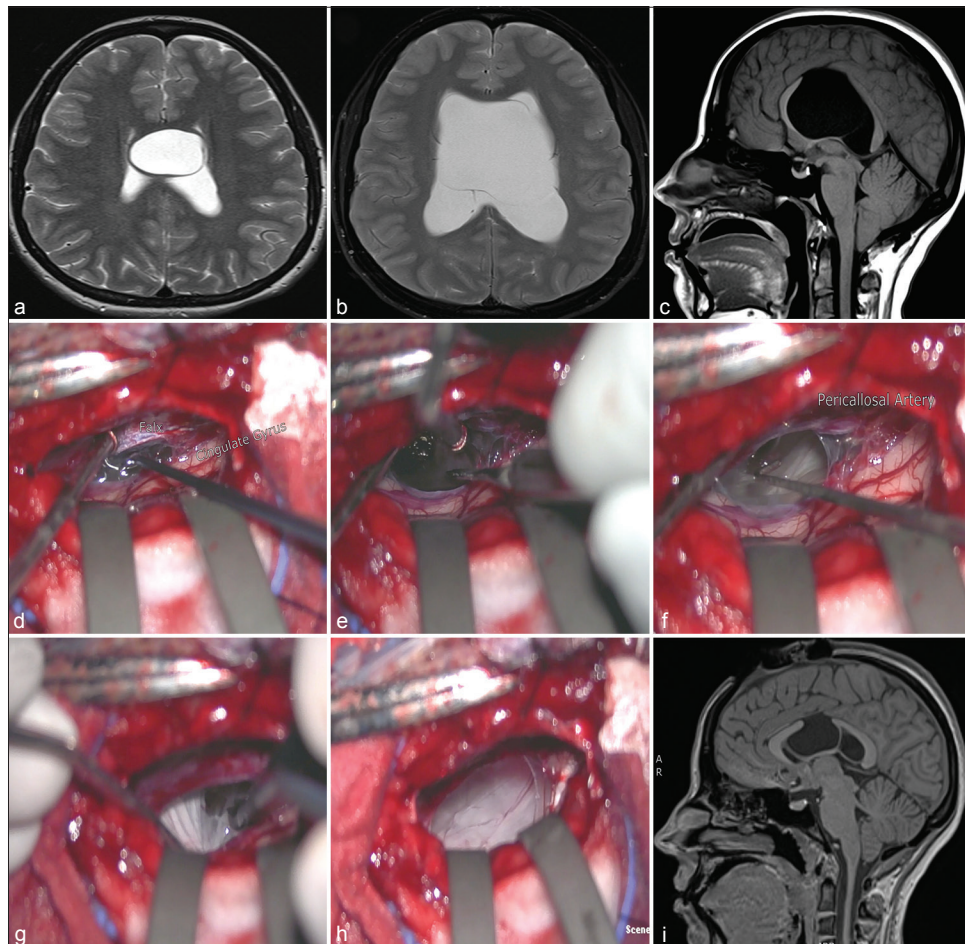


Figure 1: (a) Initial T2-weighted axial magnetic resonance imaging (MRI) scan showing an interhemispheric arachnoid cyst with partial agenesis of the corpus callosum. (b and c) Preoperative T1 sagittal and T2 axial MRI scan showing the enlarging cyst with partial agenesis of the corpus callosum and ventriculomegaly. (d-h) Intraoperative microscopic views. (d) View from a right interhemispheric approach showing the falx cerebri, cingulate gyrus, and upper surface of the cyst. (e and f) Fenestration of the upper surface of the cyst with a view of the pericallosal arteries. (g) After incising and draining the cyst, fenestration was performed in the ventricular system. (h) View of the lateral ventricle following fenestration into both the interhemispheric cistern and lateral ventricle with dilation of the cyst wall. (i) Follow-up T1 sagittal MRI scan 5 months after the microsurgical fenestration showing a successful surgical decompression with a decrease in the cyst and ventricle size.

cysts in adults, only four were located in the interhemispheric fissure.^[1] They are usually diagnosed in children with other midline neurodevelopmental disorders.^[2,13] Macrocrania, headache, seizures, and psychomotor retardation are the most frequent presentations.^[2,13] Conversely, in adults, interhemispheric arachnoid cysts lack the associated midline neurodevelopmental changes and are far less common than in children.^[16]

Controversy exists regarding surgical options. Yamasaki *et al.* reported an interhemispheric arachnoid cyst in an elderly patient, along with a literature review of similar cases.^[16] In their study, seven of eight patients managed with open surgical techniques demonstrated excellent outcomes.^[16] A systematic review of adults and children compared the results of craniotomy and cyst excision, cystoperitoneal shunting, and endoscopic fenestration. In that study, 663 arachnoid cysts that were identified, of which 44 were interhemispheric cysts.^[4] Furthermore, among the patients with interhemispheric cysts, good clinical or radiological outcomes were reported in 89% of the patients who underwent craniotomy and cyst excision, and 75% of the patients who underwent endoscopic fenestration; endoscopic technique was preferred for suprasellar, quadrigeminal, and posterior fossa arachnoid cysts, whereas microsurgical fenestration was preferred for interhemispheric cysts.^[4] In our case, the patient harbored an enlarging arachnoid cyst with associated progressive symptoms and was successfully treated with microsurgical fenestration.

CONCLUSION

Interhemispheric arachnoid cysts are rare in adults, with few reports in the literature. We successfully treated an adult patient with an enlarging interhemispheric arachnoid cyst and progressive symptoms with microsurgical fenestration.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Conflicts of interest

There are no conflicts of interest.

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