# Pericallosal artery aneurysm case reports

## 2022

A 47-year-old female presented with the sudden-onset worst headache of her life followed by dizziness, syncope, transient weakness, and numbness over the left lower extremity. She was neurologically intact, and imaging revealed a right pericallosal artery aneurysm. The patient consented to the procedure. The 2-dimensional Video 1 demonstrates the interhemispheric approach for clipping a pericallosal artery aneurysm. These aneurysms are approached in the distal-to-proximal direction along with the distal anterior cerebral artery. Meticulous dissection avoids rupture without proximal control. We highlight the key surgical steps and microsurgical techniques in approaching these aneurysms. The patient tolerated the operation well with an uneventful postoperative course [1)].

## 2021

A case of PAA that was successfully treated with flow diversion therapy in a 51-year-old male [2)].

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A 50-year-old woman with ruptured anterior communicating artery aneurysm was initially treated with balloon-assisted coiling. During the procedure the tip of a microwire inserted into balloon catheter placed in the pericallosal artery caused a local injury of the inner layer of the vessel wall and vasoconstriction, without bleeding, dissection, or flow disturbances visible in digital subtraction angiography (DSA). Control examination revealed dissecting pericallosal aneurysm. After standard dual-antiplatelet oral preparation, stent-assisted coiling of the pericallosal artery aneurysm was performed with residual contrast filling of the base of the aneurysm sac in control angiography (RROC III). After 6 months the control DSA examination showed entirely cured pericallosal aneurysm (RROC I) and reconstruction of the parent artery. Successful endovascular treatment of an iatrogenic pericallosal aneurysm was previously reported, and this method seems to be the first-choice treatment. In our case, endovascular stent-assisted coiling also allowed for safe exclusion from circulation of pericallosal dissecting aneurysm, and the implanted stent caused reconstruction of the parent artery, restoring the normal lumen diameter. The second endovascular treatment option considered was implantation of a flow-diverted stent into the pericallosal artery [3)].

## 2019

A 63-year-old female who presented with headache and perioral paresthesia determined to be Hunt and Hess Stroke Scale 1. Computed tomography angiography discovered a medium-sized left proximal pericallosal artery aneurysm trunk saccular aneurysm. Intraoperatively 2 additional small blister type aneurysms not noted on initial computed tomography were discovered and treated via clipping and wrapping, respectively. Postoperatively a cerebral angiogram revealed an additional small right A2 trunk broad-based aneurysm. Preoperative evaluation of cerebral vasculature with a cerebral angiogram or high-resolution digital subtraction angiography is essential as multiple aneurysms are commonly associated with anterior cerebral artery aneurysms. The patient was

successfully treated without any operative or postoperative complications and has remained symptom-free at 1 year follow up [4].

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The aim of Kosyrkova et al. was to present the clinical observation of a successfully treated giant pericallosal artery aneurysm in a 58-year-old man, and also analyze the publications on distal cerebral aneurysms.

The data of a patient hospitalized with a suspected tumor of the left brain hemisphere spreading to the left lateral ventricle was presented. Repeated MRI suggests a giant subtotal thrombotic aneurysm of the left perical artery, which was confirmed by SCT angiography. The patient underwent aneurysm trapping-cliping with dissection of the aneurysm sac. In the analysis of the literature, it was shown that the frequency of pericallosal artery aneurysms varies from 5.3-6.0%, and giant aneurysms of this localization are extremely rare and occur in 1-4.5% of all pericallosal artery aneurysms. Unlike distal anterior cerebral artery aneurysms of small and medium-size, giant aneurysms are characterized by pseudotumorrhagic symptoms, which causes diagnostic difficulties.

It is necessary to remember about the diagnostic difficulties caused by the pseudotumorrhosis of the giant aneurysms of the pericallosal artery and the frequent negative angiography data due to total thrombosis of the aneurysmal sac. The gold standard is microsurgical clipping with excision of the aneurysmal sac. The prognosis for this group of patients is favorable [5].

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A mirror A2 anterior cerebral artery aneurysm/A3 anterior cerebral artery aneurysm was found in a single patient. Surgical treatment was provided for all aneurysms through a single-stage procedure. The left ruptured A2/A3 aneurysm was smaller compared with the right (7.5 × 3.5 mm/10.8 × 3.2 mm). Computational fluid dynamic (CFD) showed greater wall pressure (WP) in the left ruptured A2/A3 aneurysm (left A2/A3 WP 84,000-84,402 Inst. mm Hg/right A2/3 WP 84,224-84,315). WP in the left middle cerebral artery and anterior communicating artery aneurysms showed lesser values compared with the ruptured aneurysm (WP upper values 84,361 and 84,367, respectively). Wall shear stress showed low values for all aneurysms with the lowest flow rate values in the left A2/A3 aneurysm.

In cases of ruptured mirror aneurysms followed by the presence of intracerebral hematoma, surgery is considered the primary option with the best results. A one-stage dual craniotomy procedure was found safe in the associated treatment of other multiple aneurysms. At present, the size of the aneurysm, the hemodynamic influence, and the local configuration are all considerations during the preoperative assessment of multiple aneurysm cases. This article presents the first CFD analysis of mirror DACA aneurysms associated with aneurysm multiplicity [6].

## 2017

Mortazavi et al., present a review of the literature, with an illustrative case, of a ruptured fusiform pericallosal artery aneurysm firmly attached to the lower edge of the falx cerebri and not amenable to endovascular intervention. METHODS:

Although the firm attachment between the inferior falx and the fusiform aneurysm was maintained, a

section of the lower thinner part of the falx cerebri firmly attached to the aneurysm was dissected and wrapped around the fusiform aneurysm, and then stabilized with a fenestrated clip. We chose a segment slightly longer than the length of the fusiform aneurysm to avoid pre- and post-wrap-clipping stenosis. RESULTS:

Postprocedure, except for a small area of numbness on the left distal anterolateral left leg, the patient was neurologically intact and remained neurologically intact at a 12-month follow-up.

An inferior thin segment of the falx cerebri can be used for wrap-clipping of ruptured fusiform anterior cerebral artery aneurysms. Furthermore, the inferior falx can be wrapped around the attached fusiform anterior cerebral artery aneurysm without compromising flow, offering a safe solution in these unusually complex cases [7)].

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Gross et al., presented a 72 year-old male with multiple medical comorbidities admitted with a grade 3, ruptured pericallosal aneurysm. Aortoiliac disease contraindicated a transfemoral approach and thus a 6 French 105 cm guide catheter was advanced through a 6 French short radial sheath into a bovine left common carotid artery. After straightening proximal access anatomy with an Amplatz wire to allow advancement of the guide catheter into the internal carotid artery, a 167 cm 0.013 in. headway duo was advanced through a 5 French Sofia through the guide catheter and “hubbed” to enter the aneurysm. The aneurysm was then successfully coil embolized with 4 Target Ultrasoft coils. This case illustrates the utility of a 167 cm microcatheter for coil embolization of a pericallosal aneurysm with significant proximal tortuosity via a transradial approach. Despite its 0.013 in. inner diameter and length, common Target coils were compatible and deployed without incident [8)].

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Fahr's disease is a rare idiopathic nosological entity, characterized by calcification of the basal ganglia and dentate nuclei of the cerebellum. Sometimes it may be associated to other diseases like cerebrovascular disorders. However, this link remains unclear and it needs to be further validated. We report two cases of patients with cerebrovascular disorders and Fahr's disease. In the first case, a 69-years-old woman with right internal capsule-basal ganglia haemorrhage. In the second case, a 72-years-old woman with ischemic stroke and pericallosal artery aneurysm. [9)].

## 2017

A 25-year-old man with a history of major depression presented with a crossbow bolt penetrating the head. On arrival, Glasgow Coma Scale score was E4V5M6, with no apparent neurological deficit. Computed tomography (CT) of the head showed the crossbow bolt passing near the corpus callosum, with surrounding contusion. Three-dimensional rotational angiography showed no anterior cerebral artery injuries. The crossbow bolt was removed after bifrontal craniotomy, with no postoperative infection. Postoperative CT angiography (CTA) was repeatedly performed, and a 4 mm aneurysm was observed at the pericallosal artery-right posterior internal frontal artery (PIFA) bifurcation on postoperative day (POD) 35. Trapping and the right PIFA-left cortical branch side-to-side bypass were performed on POD38. A resected specimen confirmed a pathological diagnosis of pseudoaneurysm. The patient did not show any neurological deficit or cognitive dysfunction as of 8 months after admission. Traumatic anterior cerebral artery aneurysm might have formed due to proximity to the falx cerebri. As pseudoaneurysm was detected 4 weeks after trauma in our patient, follow-up CTA or

digital subtraction angiography should be performed until at least 4 weeks after injury. In addition, neck clipping is occasionally unfeasible to treat traumatic pseudoaneurysm surgically, and a surgical strategy including bypass revascularization must be planned [10].

## 2014

A rare unique case of ruptured fusiform proximal pericallosal artery aneurysm. Endovascular treatment of this type of aneurysm is a feasible method and can be considered as an effective alternative to surgical technique [11].

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A 35-year-old with bacterial endocarditis from Streptococcus mitis was diagnosed with a ruptured 3 mm MIA of the pericallosal anterior cerebral artery after episodic diplopia. The MIA was successfully treated with stent-assisted coil embolization utilizing a Neuroform EZ stent (Stryker Neuroendovascular, Kalamazoo, MI, USA). Follow-up magnetic resonance angiography at 3months demonstrated complete aneurysm obliteration, and the patient was neurologically intact. In the literature, a M1 segment middle cerebral artery MIA, bilateral cavernous carotid MIA, and a unilateral cavernous carotid MIA were also successfully treated with Neuroform, Helistent (Hexacath, Rueil-Malmaison, France), and SILK (BALT Extrusion, Montmorency, France) stents, respectively. We present the first patient with a pericallosal MIA treated with stent-assisted coil embolization. Proper treatment of the causative organism with antibiotics minimizes the risk of infectious seeding of the stent. Intracranial stenting may be safely and effectively utilized to treat select cases of MIA [12].

## 2013

Endovascular treatment of traumatic pericallosal artery aneurysms. A case report [13].

## 2010

A 54-year-old woman who underwent endovascular treatment in the setting of a massive subarachnoid haemorrhage due to rupture of a dissecting basilar trunk aneurysm treated with stent implantation and coiling. A further saccular aneurysm in the left pericallosal artery disclosed by four-vessel angiography was treated with coiling during the same procedure. Follow-up DSA performed after six months confirmed complete occlusion of both aneurysms and patency of the stent [14].

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