Posterior inferior cerebellar artery dissecting aneurysm

- Parent Artery Occlusion Using Multiple Short iED Coils and n-Butyl Cyanoacrylate via a Marathon Microcatheter for a Dissecting Aneurysm of the Distal Posterior Inferior Cerebellar Artery With Severe Flexion of the Caudal Loop: A Case Report
- Right occipital to Right distal PICA bypass and trapping of ruptured Right PICA dissecting aneurysm after initial coil embolization
- Stand-alone small low-profile braided stents for challenging unruptured posterior inferior cerebellar artery aneurysms compared to conventional endovascular methods: A cohort study
- Current status and prospects of endovascular treatment for intracranial vertebral artery aneurysms: A narrative review
- Risk factors for the persistence of unruptured intracranial vertebral artery dissecting aneurysms treated with flow diverters
- Woven EndoBridge (WEB) device used for vertebral artery sacrifice
- Delayed Diagnosis of a Ruptured Distal Posterior Inferior Cerebellar Artery (PICA) Dissecting Aneurysm Presenting as Craniocervical Junction and Spinal Subdural Hematoma
- Microsurgery for Vertebral and Posterior Inferior Cerebellar Artery Aneurysms via Lateral Suboccipital Craniotomy

In the posterior circulation, dissecting aneurysms are more common in the vertebral artery, but can rarely affect the PICA.

Etiology

Spontaneous (common in young adults)

Trauma

Connective tissue disorders (e.g., Ehlers-Danlos, Marfan)

Infections (mycotic aneurysms)

Iatrogenic (e.g., post-surgical or endovascular manipulation)

Clinical Presentation

Subarachnoid hemorrhage (SAH) is the most common presentation (ruptured cases).

Ischemic stroke (especially lateral medullary syndrome) due to arterial occlusion.

Cranial nerve deficits, vertigo, headache, ataxia.

Imaging

MRI/MRA, CTA, or DSA (digital subtraction angiography) for diagnosis.

Fusiform or irregular dilatation along the vessel wall.

Double lumen or intimal flap may be seen in high-resolution imaging.

Differential Diagnosis

Saccular aneurysm (berry)

Mycotic aneurysm

Arteriovenous malformations (AVMs)

Vasculitis

Posterior inferior cerebellar artery dissecting aneurysms (PICA) are challenging because of its nature and anatomic relationship to medulla and lower cranial nerve.

Dissecting aneurysm of the posterior inferior cerebellar artery (PICA) are rare lesions, typically have nonsaccular morphology, involve an entire segment of artery, and are unclippable.

see also vertebral artery dissecting aneurysm

Treatment

Posterior inferior cerebellar artery dissecting aneurysm treatment.

Outcome

They carry high risk of rebleeding and mortality.

The existing literature concerning predictors of outcome after endovascular treatment is limited and controversial.

Literature review

2000

Dissecting aneurysms frequently involve the vertebral arteries and their branches, but those

exclusively on the posterior inferior cerebellar artery (PICA) represent only 24 cases in the literature, including the four cases discussed in this article. The clinical diagnosis lacks pathognomonic signs or symptoms, with presentations such as subarachnoid haemorrhage or ischaemia of the brain stem or the cerebellum, and the management is controversial. Wrapping, clipping and embolisation of the aneurysms were tried in this series with different outcomes. Exclusion of the pathological segment should be performed, as shown by rebleeding from our case which was wrapped or by progression of the vascular disease in cases where treatment was delayed. Surgical or endovascular occlusion are well tolerated in our cases and in those reported from the literature, which implies the absence of normal perforating branches to the brain stem arising from the proximal dissected segment of the PICA and a good collateral circulation. A revascularisation procedure using the occipital artery can be performed in order to prevent infarction if an endovascular test occlusion is not tolerated [1)]

Case series

17 consecutive patients with ruptured PICA dissecting aneurysms that underwent endovascular treatment from January 2003 to January 2014. Nine patients underwent selective coiling, whereas 7 patients underwent parent artery occlusion and 1 patient underwent stent-assisted coiling. Follow-up outcomes were evaluated using the modified Rankin Scale. The clinical outcomes of patients were categorized as favorable (modified Rankin Scale [mRS] score 0-1) or unfavorable (mRS score 2-6).

Favorable outcomes (mRS score 0-1) were obtained in 13 of 17 patients. Post-treatment recurrence occurred in 1 patient with selective coiling in the 15-month follow-up, and the patient received stent-assisted coiling. The only patients with stent-assisted coiling developed PICA occlusion during follow-up. Aneurysm located in distal segment usually presented with intraventricular hemorrhage (P = .015). Hypertension, coexisting hydrocephalus, and time to operation (latter than 2 weeks) were associated with unfavorable outcome.

Endovascular treatment of isolated dissecting aneurysm of PICA had excellent clinical outcomes, hypertension, coexisting hydrocephalus, and time to operation (latter than 2 weeks), which were associated with unfavorable outcome. Long-term follow-ups are necessary to provide stronger conclusions [2)].

Six patients with dissecting aneurysms in the distal segments of PICA were found in the database of a single medical center, from November 1996 to December 2008, and retrospectively evaluated. Treatment mode and follow-up clinical outcomes were analyzed.

Five patients with dissecting PICA aneurysms presented with acute intracranial hemorrhage and 1 patient presented with a large mass from an intramural hematoma. All 5 patients with intracranial hemorrhage were treated with endovascular occlusion of both the dissecting PICA aneurysm and the distal parent artery. The patient with the intramural hematoma underwent surgical trapping with end-to-end anastomosis. In 1 patient, the dissecting aneurysm recurred twice within a 5 year 3 month period, despite endovascular occlusion of both the aneurysm and the parent artery. The clinical outcome postprocedure was excellent in all patients, without permanent neurologic complication.

For the endovascular treatment of dissecting aneurysms in the distal PICA segments, we recommend occlusion of both the dissecting aneurysm and the parent artery to avoid leaving the point of initial intimal tear untreated. All of our patients had excellent clinical outcomes; however, our experience with recanalization illustrates the need for close follow-up of patients [3)].

Case reports

Posterior inferior cerebellar artery dissecting aneurysm case reports.

Subarachnoid Rebleeding and Hydrocephalus Following Flow-Diverter Treatment of a PICA Aneurysm: A Case Report

Abstract Background: Flow diverters are increasingly used in posterior circulation intracranial aneurysm treatment. However, the risk of rebleeding and subsequent hydrocephalus remains a significant complication. We report a case of subarachnoid rebleeding with acute tetraventricular hydrocephalus after flow diverter placement for a dissecting PICA aneurysm.

Case Presentation: A 76-year-old woman underwent endovascular treatment with flow diverter stent placement for a dissecting aneurysm of the right posterior inferior cerebellar artery (PICA). Shortly after the procedure, she exhibited reduced consciousness without sedative influence, opening eyes only to painful stimuli. A CT scan revealed diffuse subarachnoid hyperdensity, suspected intraparenchymal hemorrhage in the left cerebellum, and tetraventricular hydrocephalus with collapse of the suprasellar cisterns. An external ventricular drain (EVD) was placed urgently, leading to stabilization. Antiplatelet therapy was reduced to aspirin monotherapy. Over subsequent weeks, clinical evolution was slow, with slight neurological improvement. The patient is currently pending transfer to a long-term care facility.

Conclusion: Subarachnoid rebleeding and hydrocephalus may occur early after flow diverter placement, particularly in complex posterior circulation aneurysms. Close clinical and radiological monitoring is essential, and management often requires multidisciplinary coordination.

Keywords Flow diverter, Subarachnoid hemorrhage, Hydrocephalus, PICA aneurysm, External ventricular drainage, Endovascular neurosurgery

Introduction Flow-diverter stents are increasingly employed in the treatment of complex intracranial aneurysms, including those in the posterior circulation. While effective in achieving aneurysmal thrombosis, complications such as in-stent thrombosis, hemorrhagic conversion, or rebleeding can arise. We describe a case of early subarachnoid rebleeding and hydrocephalus following technically difficult flow-diverter placement in a dissecting right PICA aneurysm in an elderly patient.

Case Presentation A 76-year-old woman with a known dissecting aneurysm of the right posterior inferior cerebellar artery underwent elective endovascular treatment. The procedure was technically challenging due to vessel anatomy, and a flow diverter was deployed.

In the immediate post-procedural period, after cessation of sedatives, the patient did not regain consciousness. She opened her eyes only to painful stimuli but exhibited no purposeful responses.

Investigations A cranial CT scan showed:

Increased hyperdensity in perimesencephalic, peripontine, and peribulbar cisterns, right tentorium, and left cerebellar sulci.

Hyperdense content in the third and fourth ventricles, and occipital horns of both lateral ventricles.

Spectral CT analysis confirmed a predominant blood component mixed with contrast medium.

Suspected intraparenchymal hematoma in the left cerebellar hemisphere.

Ventricular dilation with Evans index increased from 0.25 to 0.34.

Collapse of the suprasellar cistern.

Correct positioning of the flow diverter at the right PICA.

Follow-up CT on 15/04/2025 revealed:

Decrease in ventricular hemorrhage, now limited to the right lateral and fourth ventricles.

Decrease in cerebellar hematoma and resolution of subarachnoid hemorrhage over posterior convexities.

Stable ventricular size and no signs of hydrocephalus.

Treatment Given the findings of acute subarachnoid rebleeding and tetraventricular hydrocephalus, the patient was urgently assessed by neurosurgery. An external ventricular drain (EVD) was placed at an opening pressure of 9 mmHg.

Due to rebleeding, the antiplatelet regimen was modified, continuing only with aspirin. Enteral nutrition was initiated via percutaneous endoscopic gastrostomy (PEG) due to the altered level of consciousness. Neurological rehabilitation and supportive care were instituted.

Outcome and Follow-Up After 49 days of hospitalization:

The patient shows eyes opening spontaneously, recognizes family members, and obeys simple commands.

No fever; blood pressure 151/86 mmHg.

Analytical findings included mild anemia (Hb 10.5 g/dL), thrombocytosis (487,000/µL), and elevated C-reactive protein (16.6 mg/dL).

Neurological condition is improving slowly but remains severely impaired.

She is currently pending transfer to a long-term care facility for rehabilitation.

An interconsultation with Rheumatology was performed regarding continuation of osteoporosis management (Prolia®). Despite the severe disability, it was recommended to maintain treatment due to the very high risk of spontaneous fractures.

Discussion Rebleeding following flow-diverter placement, although rare, is a recognized complication, particularly in posterior circulation aneurysms. The dissecting nature of the lesion and the technical complexity likely contributed to vessel fragility and hemorrhage.

Hydrocephalus in this context results from obstruction of CSF pathways due to intraventricular blood. Management required urgent CSF diversion with an EVD and modification of antiplatelet therapy.

This case underscores the importance of close collaboration between interventional neuroradiology, neurocritical care, neurosurgery, and rehabilitation teams. Decisions regarding chronic therapies

(e.g., osteoporosis treatment) must consider long-term functional prognosis and quality of life risks.

Learning Points Flow diverters in posterior circulation aneurysms carry a significant risk of rebleeding and hydrocephalus.

Mixed blood and contrast within the ventricular system can be differentiated using spectral CT imaging.

Early recognition and treatment of hydrocephalus are crucial to prevent further neurological deterioration.

Post-procedural antiplatelet therapy must be reassessed promptly in the context of hemorrhagic complications.

Chronic comorbidities such as osteoporosis still require active management even in patients with severe neurological sequelae.

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