Commentary: Microsurgical Clipping of a Recurrent Posterior Communicating Artery Aneurysm With Intradural Anterior Clinoidectomy: 2-Dimensional Operative Video

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Posterior communicating artery (PCoA) aneurysms account for up to 25% of all intracranial aneurysms and frequently present with subarachnoid hemorrhage, nontraumatic subdural hemorrhage, or an oculomotor nerve palsy (ONP).[1] Up to one-third of patients with PCoA aneurysms may develop an ONP, which is believed to occur from either direct compression or arterial pulsations from the aneurysm dome.[2]

Several factors may influence the recovery of an ONP after endovascular coiling or microsurgical clipping, including the severity of the palsy before the procedure, patient age, aneurysm size, and the time interval between the onset of the ONP and aneurysm treatment.[3]

Several studies have reported higher recovery rates of PCoA aneurysm–induced ONPs with microsurgery compared with endovascular coiling.[4,5] In a meta-analysis of 297 patients, Zheng et al[2] showed the superiority of surgical management over endovascular intervention in resolving ONP caused by PCoA aneurysms. A possible rationale for this observed advantage of microsurgical clipping is that clip ligation reduces the overall mass effect of the aneurysm dome. By contrast, endovascular coiling does not decrease the aneurysm size and can actually increase the mass effect if the aneurysm is large enough.[5] However, few studies have demonstrated ONP recovery after endovascular coiling; eliminating aneurysmal sac pulsations may play a key role in this improvement.[2,6,7]

The authors present a comprehensive video detailing the microsurgical clipping of a complex, previously coiled posterior communicating artery aneurysm with a near fetal posterior cerebral artery (PCA).[8] They also illustrate the benefits of performing an intradural anterior clinoidectomy. They opted for microsurgical clipping instead of conventional endovascular alternatives such as stent-assisted coiling or flow diversion because these options require the use of dual antiplatelet therapy. Given the patient's history of medication noncompliance, deployment of a stent or flow diverter posed a risk for thromboembolic complications.

The authors determined that the prognosis for oculomotor nerve palsy was poor. Hence, the primary indication for surgical intervention was preventing aneurysmal progression and subarachnoid hemorrhage. This was confirmed intraoperatively because the third nerve was found to be pale and poorly vascularized. The authors confirmed the fetal PCA anatomy through intraoperative quantitative blood flow assessments. The patient was discharged with no new deficits or periprocedural complications. A postoperative cerebral angiogram showed complete obliteration of the aneurysm, but the oculomotor nerve palsy never improved.

We applaud the authors for the description of their microsurgical technique and for justifying the rationale behind their decision. Although endovascular coiling has become a prominent therapeutic option for intracranial aneurysms, aneurysmal recurrence postcoiling remains a critical challenge.[9,10] Moreover, some investigations have shown higher recanalization rates after coil embolization in PCoA aneurysms.[9,11,12] Different risk factors control the risk of recanalization in PCoA aneurysms, including large size and the presence of a wide neck.[13] In the authors' case, the history of failed coiling, the presence of a fetal PCA configuration, and the history of medication noncompliance render all potential endovascular options such as flow diversion and stent-assisted coiling more challenging and less feasible compared with microsurgical clipping. As such, we believe that the authors presented a convincing justification for their strategy and effectively illustrated how an intradural anterior clinoidectomy can provide better proximal control, enhanced visualization of the aneurysm neck, and ultimately allowed the authors to preserve perforatoring arteries associated with the aneurysm.

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