Microsurgical Excision of Ruptured Lenticulostriate Artery Aneurysm

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Lenticulostriate artery aneurysms are uncommon lesions, usually found in adults after hemorrhage. Despite their challenging location, mortality rates after initial hemorrhage are favorable. Securing the hemorrhage source is critical but may be complicated by lesional compression or thrombosis on posthemorrhage vascular imaging. We present key steps in the diagnosis and surgical management of a ruptured lenticulostriate aneurysm (Video 1). A healthy 18-year-old patient with prior intermittent prescription amphetamine use presented after acute severe headache onset while weight lifting. On examination, he had trace left upper extremity drift and weakness but was otherwise neurologically intact. A head computed tomography demonstrated a 2.9 × 2.6 × 1.7-cm right basal ganglia intraparenchymal hemorrhage, with trace subarachnoid hemorrhage in the basal cisterns. Secondary imaging including magnetic resonance imaging, computed tomography angiogram, and digital subtraction angiogram was negative for underlying lesions. After an uneventful recovery, a 4-month magnetic resonance angiogram and subsequent digital subtraction angiography demonstrated a 2.7-mm right lenticulostriate aneurysm in the area of the prior hemorrhage. Treatment was recommended to prevent a rehemorrhage, with the safety of local vessel sacrifice presumed based on prior local tissue damage. Microcatheterization was unsuccessful. A right frontotemporal craniotomy for transsylvian, transinsular microsurgical aneurysm excision was performed, with image guidance used for the insular entry site. The patient was discharged home neurologically intact on postoperative day 2. At 1-year follow-up, there were no new or recurrent vascular lesions on imaging. Delayed imaging is critical to identify initially occult cerebrovascular lesions after hemorrhage. The transsylvian, transinsular approach provides safe access to the basal ganglia region in selected patients.