

# Successful Resection of a Growing Distal Medial Lenticulostriate Artery Pseudoaneurysm Presenting with Isolated Intraventricular Hemorrhage

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*Introduction:* Distal medial lenticulostriate artery (LSA) aneurysms associated with isolated intraventricular hemorrhage (IVH) are extremely rare. We report a very rare case of the isolated IVH due to the rupture of the distal medial LSA pseudoaneurysm that was not visible at the initial angiography but later emerged and grew. *Case Report:* A 61-year-old woman with a history of hypertension had sudden onset of severe headache and mild consciousness disturbance. The computed tomography scan revealed the IVH, but the initial angiographies showed no evidence of aneurysm. The follow-up magnetic resonance imaging revealed that an intraventricular mass, arising from the right distal medial LSA, emerged and grew into the right anterior horn. Considering the risk of rebleeding, we resected the mass lesion via the transsulcal transventricular approach. The postoperative imaging showed complete obliteration of the mass lesion. Histopathological analysis indicated the pseudoaneurysm. The patient was discharged without any neurological deficit. *Conclusions:* The careful and repetitive follow-up imaging should be done in the cases with isolated IVH even if the initial image evaluations are unrevealing. The transsulcal transventricular approach can be the most minimally invasive surgical option for intraventricular lesion. **Key Words:** Angiographically occult—distal medial lenticulostriate artery pseudoaneurysm—intraventricular lesion—isolated intraventricular hemorrhage—transsulcal transventricular approach.

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## Introduction

Distal medial lenticulostriate artery (LSA) aneurysms associated with isolated intraventricular hemorrhage (IVH) are extremely rare with only 3 case reports in which the existence of the distal medial LSA aneurysm was confirmed by the initial angiography.<sup>1,3</sup> We experienced a very rare case of the isolated IVH due to the rupture of the distal medial LSA pseudoaneurysm that was not visible at the initial angiography but later emerged and grew. Also, we successfully resected the lesion via the transsulcal transventricular approach.

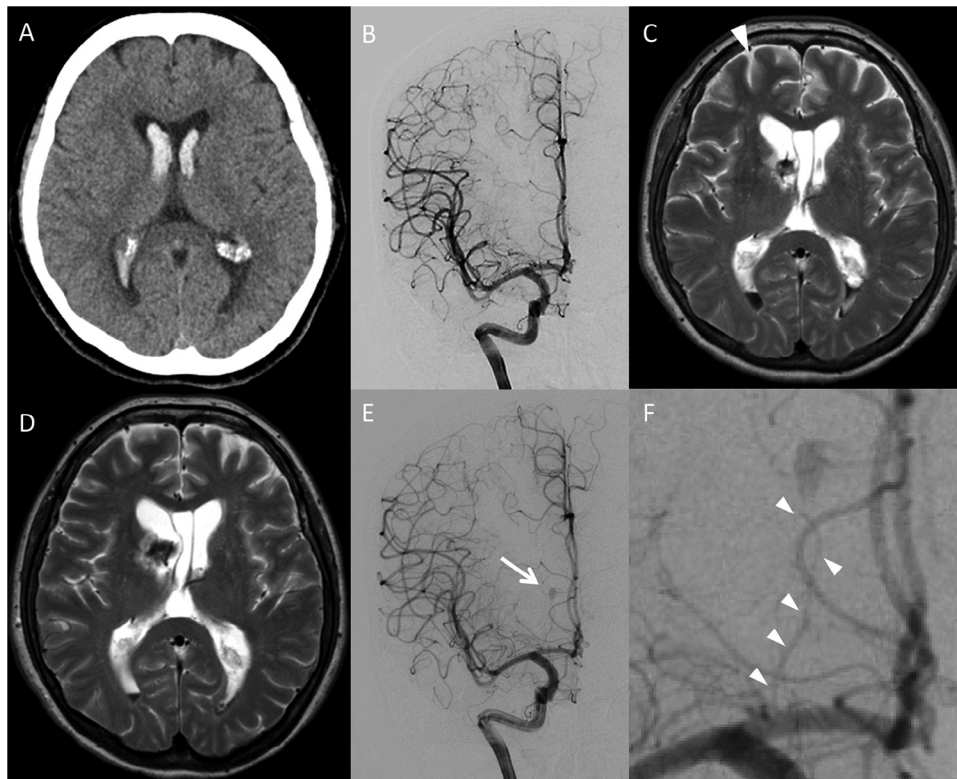
## Case Report

A 61-year-old woman was referred to our hospital because of sudden onset of severe headache and mild consciousness disturbance. She had a history of hypertension but no evidence of coagulation disorders or collagen diseases. The computed tomography (CT) scan revealed IVH occupying symmetrically bilateral lateral ventricles (Fig 1, A). CT angiography and digital subtraction angiography (DSA) showed no evidence of abnormal vessels (Fig 1, B). Initial conservative treatment was performed, and her symptoms were gradually recovered. The magnetic resonance imaging (MRI) on Day 12 showed that a 8.0 × 9.0-mm intraventricular mass emerged on the side of the head of the right caudate nucleus, which protruded into the right anterior horn (Fig 1, C). The MRI on Day 19 demonstrated the size of the mass increased (Fig 1, D). The DSA on Day 22 revealed pooling of the contrast medium arising from the right distal medial LSA whose origin was the A1 segment of the right anterior cerebral artery (Fig 1, E, F).

Considering the risk of rebleeding, we decided to perform direct surgery. The right superior frontal sulcus

was deep and close to the right anterior horn (Fig 1, C). Given this advantage, we chose to resect the mass lesion via the transsulcal transventricular approach. We opened the right superior frontal sulcus, resected the bottom of the sulcus, and reached the anterior horn of the right lateral ventricle. While the mass lesion was found in the lateral ventricle, its origin was onto the head of the caudate nucleus (Fig 2, A). We minimally incised the caudate nucleus surface and found the proximal medial LSA and the origin of the mass lesion (Fig 2, B). After clip ligation of the proximal medial LSA, the mass lesion was completely resected (Fig 2, C). The postoperative course was uneventful. The postoperative DSA showed complete obliteration of the aneurysm (Fig 2, D). The patient was discharged without any neurological deficit.

Histopathological analysis was performed on the operatively extracted specimen. The main part was fresh clots inside the wall of the partially organized thrombus (Fig 2, E). Although a small vessel was attached to the thrombus (Fig 2, F), there was no significant thrombus within the vessel and no clear evidence of the ruptured vessel wall (Fig 2, G). We speculate that there was pseudoaneurysm formation on the distal part of this vessel.



**Figure 1.** Preoperative follow-up imaging. (A) Initial computed tomography showing IVH occupying symmetrically bilateral lateral ventricles. (B) The DSA of the right internal carotid artery demonstrating no evidence of abnormal vessels including aneurysms, arterial dissections, or arteriovenous malformations. (C) The MRI on Day 12 revealing that a 8.0 × 9.0-mm intraventricular mass emerged on the side of the head of the right caudate nucleus, which protruded into the right anterior horn. The right superior frontal sulcus was deep and close to the right anterior horn (arrowhead). (D) The MRI on Day 19 showing the size of the mass increased to 12 × 13 mm. (E) The DSA on Day 22 revealed pooling of the contrast medium (arrow) arising from the right distal medial LSA. (F) The origin of the medial LSA (arrowheads) came from the right A1 segment. Abbreviations: DSA, digital subtraction angiography; LSA, lenticulostriate artery; MRI, magnetic resonance imaging.

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