

## Video Abstract

# Microsurgical clipping of a large ruptured anterior communicating artery aneurysm

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## Abstract

**Background:** Anterior communicating artery (ACoM) aneurysms are the most complex aneurysms of the anterior cerebral circulation. They mostly arise between the dominant A1 and the ACoM, and are associated with intraventricular hemorrhage or other aneurysms in around 20%–30% of the cases. Giant and fusiform aneurysms are rare in this location in contrast to the common small ruptured aneurysms. Throughout the treatment, branches of A1–A2 complex such as the orbitofrontal artery, the frontopolar artery, the recurrent artery of Heubner, medial lenticulostriate arteries, and small perforators from the A1–A2 junction should be preserved. The orientation of the aneurysm, undefined in case of tortuous A1, but usually to the contralateral side of the dominant A1, might be downward, forward, upward, backward, or even of a complex morphology. Moreover, the evaluation of the chiasm and skull base, the site of possible rupture, the presence of intraluminal thrombosis, vascular calcifications, or anatomic variations of A1 and A2 segments is required. Since the angle between the ACoM perforators and the A2s varies between 30° and 180°, parallel application of the clip along the ACoM is unrecommended.

**Technique:** The patient with large ruptured ACoM aneurysm underwent supine position. The head, placed above the cardiac level, was minimal extended, and slightly tilted and rotated to the opposite side according to the projection of the aneurysm dome. A left lateral supraorbital approach was performed. The carotid cistern and the lamina terminalis were opened to release cerebrospinal fluid. Arachnoid bands extending from the olfactory triangle to the lateral side of the optic nerve were carefully dissected to find the ipsilateral A1 and the aneurysm. Skillful dissection of the ACoM complex under repeated temporary and pilot clips allowed a safe definitive clipping. Occasionally, aneurysm remodeling and shrinking under bipolar coagulation might be required. Intraoperative angiography and/or Doppler ultrasound determine complete occlusion of the aneurysm and patency of the vessels.

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**Conclusion:** Skillful microneurosurgery is required for the management of challenging ruptured AComA aneurysms.

**Videolink:** <http://surgicalneurologyint.com/videogallery/ruptured-acoma-aneurysm-14>

**Key Words:** Anterior communicating artery aneurysm, double-clip, microneurosurgery, microsurgical clipping

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