

Complex middle cerebral artery aneurysm treatment

Many of these types of aneurysms cannot be treated with direct [aneurysm neck clipping](#) or dome [coiling](#). Although [wrapping](#) the aneurysm may decrease the bleeding risk, it is not really effective for complex aneurysms.

Among the surgical techniques, direct neck [clipping](#) is always the preferred option when it is technically achievable ^{1) 2)}.

Many of these types of aneurysms cannot be treated with direct aneurysm neck clipping or dome coiling. Although wrapping the aneurysm may decrease the bleeding risk, it is not really effective for complex aneurysms.

Because of the diversity of aneurysm morphology and the location and hemodynamic differences among patients, tailored surgical treatment is required for each individual case. Techniques such as aneurysm trapping or resection and arterial reconstruction play a pivotal role in treating these formidable lesions ³⁾.

Bypass for complex middle cerebral artery aneurysm

see [Bypass for complex middle cerebral artery aneurysm](#).

Videos

16-yr-old boy presented with episodes of severe headaches, blurred vision, dizziness, and muffled hearing and was discovered to have a large fusiform aneurysm of the left middle cerebral artery (MCA), M1 segment, 20 × 12 mm in dimension. The lenticulostriate arteries were arising proximal and distal to the aneurysm, but the anterior temporal artery was arising from the aneurysm. The aneurysm culminated in the distal M1 segment, and M1 immediately branched into 3 M2 vessels, the lower one being the larger. Due to origin of the lenticulostriate arteries and the anterior temporal artery and patient's age, a bypass was preferred to a flow diversion stent. He underwent left frontotemporal craniotomy and orbital osteotomy, left cervical external carotid artery exposure followed by radial artery graft extraction. The Sylvian fissure was opened and intracranial ICA was exposed for proximal control. The distal M2 vessels traced back toward the aneurysm. The aneurysm was not clippable and a bypass to the larger inferior M2 branch was performed followed by aneurysm trapping. The radial artery graft bypass was placed from the left external carotid artery to the M2 segment of left MCA, followed by clip reconstruction and occlusion of the MCA aneurysm with the preservation of the anterior temporal branch and the lenticulostriate vessels. The patient had no postoperative complications. At the follow-up, one month after surgery, he was doing well, and his angiogram demonstrated patency of the bypass. This video shows the management of a complex fusiform M1 aneurysm with bypass and trapping. Informed consent was obtained from the patient prior to the surgery that included videotaping of the procedure and its distribution for educational purposes. All relevant patient identifiers have also been removed from the video and accompanying radiology slides ⁴⁾.

This video demonstrates trapping and a double-barrel superficial temporal artery-to-middle cerebral artery (STA-MCA) bypass to treat two fusiform aneurysms in a left dolichoectatic superior MCA trunk. A 46-year-old man with AIDS presented with aphasia and hemiparesis. IRB approval and patient consent were obtained. Both STA branches (frontal and parietal) were harvested. After widely splitting the sylvian fissure from its proximal portion to the angular gyrus, the two fusiform aneurysms on the superior MCA trunk were identified in the insular recess and the circular sulcus. The outflow artery from each aneurysm was identified and prepared for the bypass. The STA was transected, and both limbs were brought down into the fissure. After trapping the distal aneurysm, an end-to-end anastomosis of the parietal STA branch to the M2 MCA was performed. Thereafter, a second bypass was performed in an end-to-side fashion to an M2 branch from the base of the first aneurysm. The second aneurysm was then trapped. Indocyanine green angiography confirmed the patency of both bypasses. Complete aneurysm occlusion and bypass patency were also confirmed with postoperative angiography. The patient recovered from his pre-operative neurological deficits. This case demonstrates the efficacy of double-barrel STA-MCA bypass in combination with aneurysm trapping in a patient with a complex dolichoectatic superior MCA trunk aneurysm. It also highlights the advantage of using end-to-end anastomosis for deep recipients with limited access ⁵⁾.

1)

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3)

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4)

Cheng CY, Qazi Z, Sekhar LN. Left External Carotid Artery to the Middle Cerebral Artery Bypass with Radial Artery Graft and Clip Reconstruction of a Large Middle Cerebral Artery Fusiform Aneurysm: 3-Dimensional Operative Video. *Oper Neurosurg (Hagerstown)*. 2019 Jan 11. doi: 10.1093/ons/opy406. [Epub ahead of print] PubMed PMID: 30649501.

5)

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