Giant Serpentine Aneurysm Treated with Double EC-IC Bypass with Thrombectomy and Excision of Aneurysm: A Case Review and Technical Note

Paul E. Kaloostian1, Han Chen2*, Howard Yonas2
1Johns Hopkins University Medical Center, Baltimore, USA
2University of New Mexico Neurological Surgery, Albuquerque, USA
Email: *pkaloos1@jhmi.edu

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ABSTRACT

Objective and Importance: The authors report a case of a symptomatic giant serpentine MCA aneurysm treated with double STA-MCA bypass with thrombectomy and excision of aneurysm. This is the first reported case of a double bypass with concomitant thrombectomy and excision of aneurysmal segment. Clinical Presentation/Methods: We report the case of a 27-year-old Hispanic male with severe acute decline in mental status with a giant serpiginous MCA aneurysm with significant mass effect and midline shift trapping the lateral ventricular system. Intervention/Results: Patient presented initially to an outside hospital for altered mental status and confusion. Patient was diagnosed with a giant serpiginous MCA aneurysm and hydrocephalus. A left ventriculoperitoneal shunt was placed at the outside hospital and patient was transferred to University of New Mexico. At this time, his mental status declined rather abruptly. He was treated with a double STA-MCA bypass procedure with aneurysm resection.

Keywords: Double Bypass; STA-MCA; Serpentine; Aneurysm; Resection; Thrombectomy

1. Objective and Importance

The authors present the only known case of a symptomatic giant serpentine MCA aneurysm treated with double STA-MCA bypass with thrombectomy and excision of aneurysm for an acutely declining patient due to mass effect and hydrocephalus.

2. Clinical Presentation

We report the case of a 27-year-old Hispanic male with severe acute decline in mental status with a giant serpentine MCA aneurysm with severe mass effect and midline shift trapping the lateral ventricular system.

3. Intervention

Patient had a ventriculoperitoneal shunt placed at an outside facility a few days prior to presentation. Upon transfer to University of New Mexico, the patient was comatose and posturing. His imaging studies demonstrated a 10 cm × 6 cm × 9 cm mass causing acute hydrocephalus with trapping of the lateral ventricular system due to mass effect (Figure 1).

Figure 1. Acute hydrocephalus caused by a 10 cm × 6 cm × 9 cm mass, leading to mass effect-induced trapping of the lateral ventricular system.

*Corresponding author.

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He was taken to the operating room where a double STA-MCA bypass procedure to the distal MCA with aneurysm trapping and decompression was performed. The anterior and posterior divisions of the STA were dissected. A craniotomy was performed and distal M3 vessel was identified and anastomosed with a posterior branch of the STA. Next, the more anterior M2 MCA vessel was identified and dissected from the aneurysm wall and anastomosed with the anterior STA branch. Proximal and distal occlusion was accomplished using aneurysm clips (Figures 1-4). At this point, the serpentine aneurysm was then opened and the lipid-laden contents were removed with the Cavitron ultrasonic aspiration device. This segment was then aggressively resected. Patient awoke post-operatively over the course of a week. He continued to have left side spasticity but was completely alert and oriented with good strength throughout. On follow up more than 17 months later, CTA studies show intact bypass grafts, with strong temporal artery pulses, and a patient who is applying for medical school (Figures 5-7).

4. Discussion

Giant serpentine aneurysms were first described by McLaurin and Segal in 1977 [1]. These anatomically daunting lesions are well characterized in the literature as being larger than 2.5 cm with a very tortuous long segment of vascular aneurysmal dilatation with mostly thrombosed contents. They classically show areas of calcification with larger lesions demonstrating moderate to severe mass effect [2]. These lesions may cause hydrocephalus, headaches, contralateral hemiparesis, and seizures [3]. It is described that the origin of these lesions resides in the evolution of an initial fusiform aneurysm that then expands and grows due to repeated intramural
Figures 4. View of the more anterior M2 segment of the MCA vessel identified discussed. This M2 segment was dissected away from the aneurysm wall and anastomosed with the anterior branch of the STA. Proximal and distal occlusion was achieved using aneurysm clips.

Figures 5. Over 17 months later, CTA studies demonstrating intact bypass grafting. Clinically, the patient demonstrated strong temporal artery pulsations.

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Figures 7. Over 17 months later, CTA studies demonstrating intact bypass grafting. Clinically, the patient demonstrated strong temporal artery pulsations.
Giant serpentine aneurysms are challenging lesions to treat. There is no standard approach to treat these lesions. Increasingly, bypass surgery to maintain vital distal flow has been utilized allowing thrombosis and elimination of the mass caused by the thrombosed giant aneurysm. In our patient, the lesion caused acute deterioration from mass effect and hydrocephalus requiring a more emergent surgical treatment. By doing so, we were able to provide immediate relief of mass effect, resolution of hydrocephalus, and continued distal cerebral blood flow.

REFERENCES


