A Posterior Communicating Segment Aneurysm of the Supraclinoid Internal Carotid Artery Treated with an Extracranial to Intracranial Bypass and Trapping

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Abstract

Surgical treatment of giant aneurysms often poses significant challenges. Endovascular techniques have evolved exponentially over the last decades, and most of these complex aneurysms can be treated with flow-diverting techniques; however, successful obliteration of all giant aneurysms is not always possible with endovascular flow-diverting techniques. Although the need for microsurgical intervention has undoubtedly diminished, a versatile-thinking surgeon should keep in mind that obliteration of these aneurysms combined with revascularizing the distal circulation via extracranial–intracranial bypass techniques can provide a potentially life-long durable solution. The key to curing these pathologies is to utilize interdisciplinary decision making with a robust knowledge of the pros and cons of different treatment approaches. Herein, we present a case of a giant posterior communicating segment aneurysm of the left supraclinoid internal carotid artery (ICA), which was treated by obliteration (►**Fig. 1**). Extradural anterior clinoidectomy was used to provide exposure of the supraclinoidal ICA proximal to the aneurysm, and revascularization of the distal circulation was achieved with a common carotid artery to M2-superior trunk bypass using a radial artery interposition graft (►**Fig. 2**). The patient was a 62-year-old female who presented with vision loss in her left eye but was otherwise neurologically intact. She had a history

Keywords
- giant aneurysm
- cerebral bypass
- revascularization
- anterior clinoidectomy

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of two unsuccessful flow-diverting stent placement attempts 2 months prior to this surgery. Postoperatively, the patient woke up without any deficits, with her left eye vision partially recovered and ultimately returning to normal at 1-year follow-up. Computed tomography (CT) angiography at a 1-year follow-up showed complete obliteration of the aneurysm and successful revascularization of the distal circulation. The link to the video can be found at: https://youtu.be/DsIuIJJj1l4.

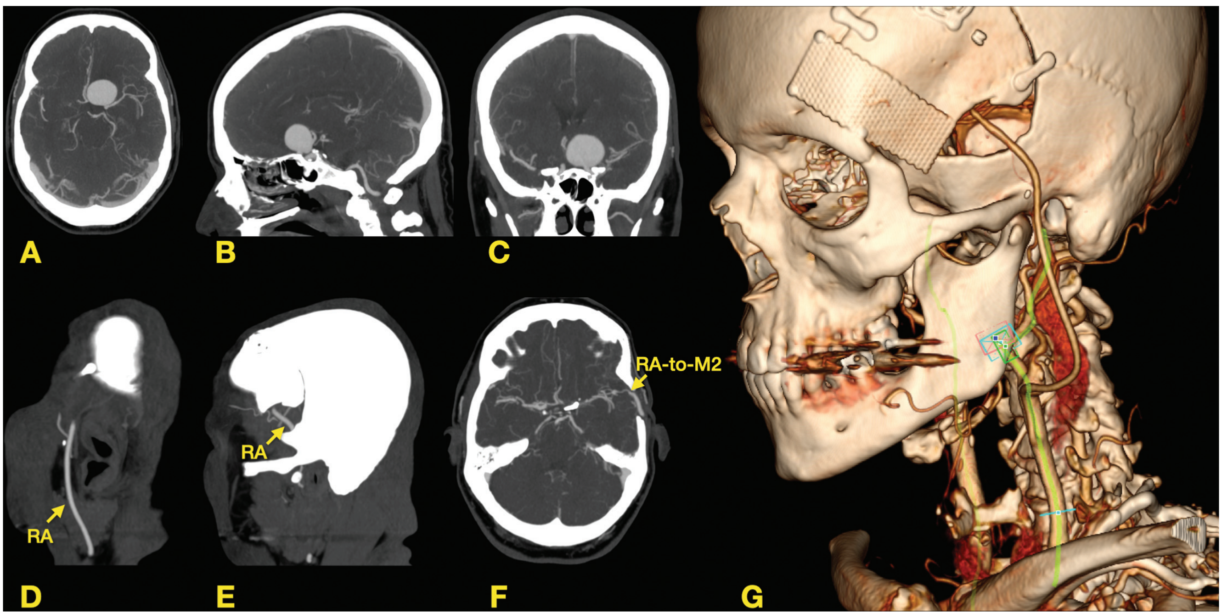

Fig. 1 Preoperative axial (**A**), sagittal (**B**), coronal (**C**), and postoperative sagittal (**D, E**), axial (**F**), and 3D reconstructed computerized tomography angiography of the patient. 3D, three-dimensional; RA: radial artery, RA-to-M2: radial artery to M2 superior trunk anastomosis.

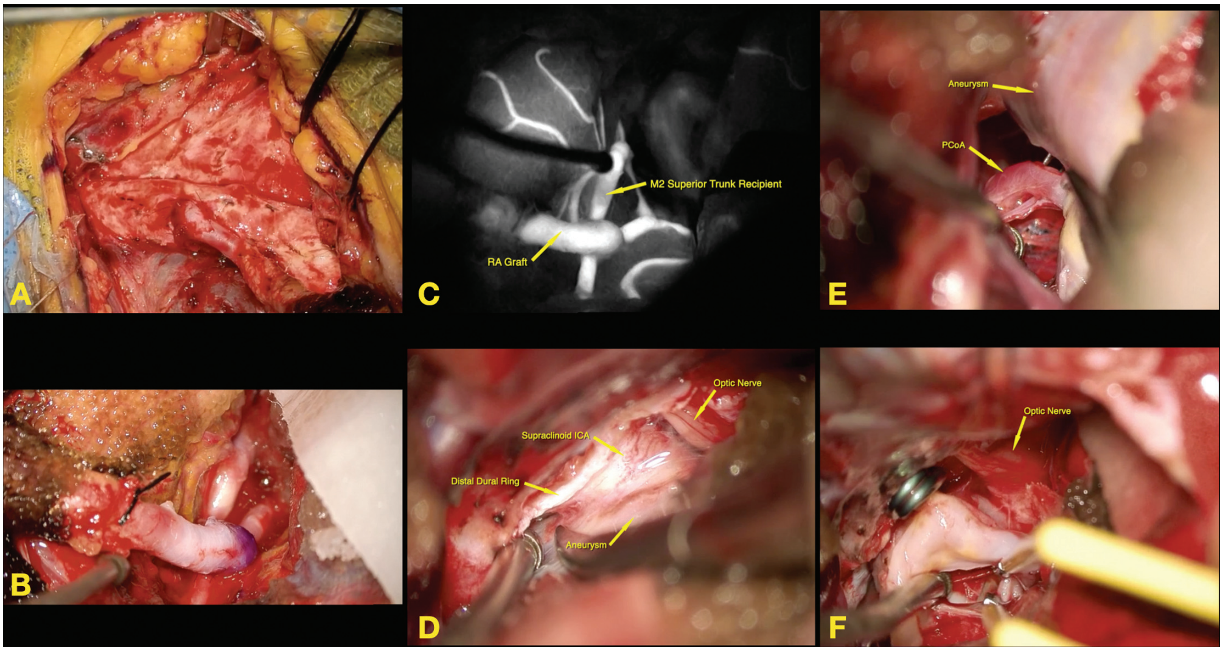

Fig. 2 Intraoperative photomicrographs showing the common carotid artery to radial artery interposition graft anastomosis (**A**); radial artery to M2 superior trunk anastomosis (**B**) and photomicrograph of the indocyanine green video angiography (**C**); view of the supraclinoidal internal carotid artery, distal dural ring, optic nerve, and aneurysm after extradural anterior clinoidectomy (**D**); the relationship of the aneurysm with the posterior communicating artery (**E**); decompressed optic nerve after complete trapping and incision of the aneurysm. ICA, internal carotid artery; PCoA, posterior communicating artery.

Note

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Disclosure

The authors have no personal, financial, or institutional interest in any of the drugs, materials, or devices described in this article.

Conflict of Interest

None declared.