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Video Abstract

High flow bypass for right giant cavernous internal carotid artery aneurysm with fibromuscular dysplasia of cervical internal carotid artery: microsurgical 2-D video

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ABSTRACT

Background: It is well known that intracranial aneurysms can be associated to fibromuscular dysplasia (FMD). Nevertheless, it is not clear the best treatment strategy when there is an association of giant symptomatic cavernous carotid aneurysm with extensive cervical internal carotid artery (ICA) FMD.

Case Description: We present the case of 63 year-old right-handed female with hypothyroidism, 1 month history of right-sided pulsatile headache and visual disturbances with feeling of fullness sensation and blurry vision. Her neurological exam showed partial right oculomotor nerve palsy with mild ptosis, asymmetric pupils (right 5 mm and left 3mm, both reactive), and mild exotropia, normal visual acuity. Computed tomography angiogram and conventional angiogram showed 2.5 × 2.6 × 2.6 cm non-ruptured aneurysm arising from cavernous segment of the right ICA. She had right hypoplastic posterior communicant artery, and collateral flow through anterior communicant artery during balloon test occlusion and the presence of right cervical ICA FMD. The patient was started on aspirin. After lengthy discussion of treatment options in our neurovascular department, between observations, endovascular treatment with flow diverter device, or high flow bypass, recommendation was to perform high flow bypass and patient consented for the procedure. We performed right-sided pterional trans-sylvian microsurgical approach and right neck dissection at common carotid bifurcation under electrophysiology monitoring (somatosensory evoked potentials and electroencephalography); while vascular surgery department assisted with the radial artery graft harvesting. The radial artery graft was passed through preauricular tunnel, cranially was anastomosed at superior trunk of middle cerebral artery, and caudally at external carotid artery (Video). Intraoperative angiogram showed adequate bypass patency and lack of flow within aneurysm. The patient was extubated postoperatively and discharged home with aspirin in postoperative day 5. Improvement on oculomotor deficit was complete 3 weeks after surgery.

Conclusion: Nowadays, endovascular therapy can manage small to large cavernous ICA aneurysms even if associated to FMD, although giant symptomatic cavernous carotid aneurysms impose a different challenge. Here, we present the management for the association of symptomatic giant cavernous ICA aneurysm and cervical ICA FMD with high flow bypass. We consider important to keep the skills in the cerebrovascular neurosurgeon armamentarium for the safe management of these lesions.

Keywords: Fibromuscular dysplasia (FMD), Giant cavernous internal carotid artery (ICA) aneurysm, High flow bypass, Microsurgery.

[Video 1]-Available on:

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Annotations[1]

1) 0:00:00 – Clinical presentation.
2) 0:00:21 – Preoperative imaging.
3) 0:00:33 – Rationale of treatment.
4) 0:01:41 – Patient positioning.
5) 0:02:03 – Dural opening and sylvian fisuure dissection.
6) 0:02:33 – Sylvian fissure anastomosis.
7) 0:03:58 – Cervical anastomosis.
8) 0:04:23 – Postoperative imaging and outcome.

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Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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1. Bender MT, Hurtado C, Jiang B, Campos JK, Huang J, Tamargo RJ, *et al*. Safety assessment of endovascular treatment of cerebral aneurysms in patients with fibromuscular dysplasia. Interv Neurol 2018;7:110-7.

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