



Endovascular NeuroIntervention saved patient's vision

DIVISION OF INTERVENTIONAL NEURORADIOLOGY

Presents a patient case treated by the team members of the division and physicians and staff of the UCLA Comprehensive Stroke Center

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PATIENT PRESENTATION

- This is a 79-year-old man with 1 month history of left orbital congestion, double vision and increased left intraocular pressure. Initially treated for Tolosa Hunt without improvement. Referred for angiography for further evaluation.

EVALUATION AND IMAGING

- Left internal carotid angiogram (Figure 1) shows early filling of left cavernous sinus with drainage into cerebellar cortical veins and into the left superior ophthalmic vein. This is consistent with diagnosis of dural arteriovenous fistula of the cavernous sinus.

INTERVENTION PERFORMED

- Endovascular embolization entailed occlusion of the cavernous sinus, the recipient vein for the fistula. Transvenous catheterization of the cavernous sinus was undertaken through the left jugular vein and then through the thrombosed left inferior petrosal sinus and into the left cavernous sinus (Figure 2).

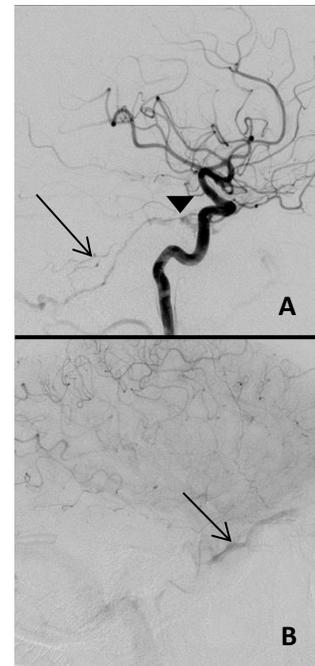


Figure 1: Lateral view of left ICA shows early filling of left cavernous sinus (arrowhead in A) and cerebellar cortical veins (arrow in A). In late arterial phase, filling of the superior ophthalmic vein is noted (arrow in B).

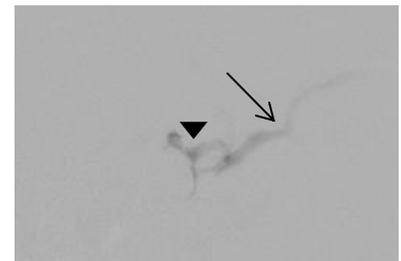


Figure 2: Selective catheterization and injection of the left cavernous sinus shows the left superior ophthalmic vein filling (arrow). Occlusion of the fistula entails blockage of the cavernous sinus (arrowhead), the main drainage pathway for the fistula.

(over)

INTERVENTIONAL NEURORADIOLOGY



Brain Hemorrhage, Aneurysm/AVM/fistulae
 Aneurysm coiling
 Stent/balloon assisted aneurysm coiling
 Flow diverter stent device embolization
 AVM/Dural fistulae embolization
 Venous Sinus Thrombectomy/Thrombolysis
 Direct transcatheter embolization

Chronic Occlusive Cerebrovascular Disease
 Extra/Intracranial Angioplasty/Stenting
 Venous Sinus Angioplasty/Stenting

Head/neck/orbit tumors & vascular malformations, epistaxis
 Endovascular embolization
 Direct percutaneous embolization

INTERVENTION PERFORMED (CONTINUED)

- With microcatheter in the center of the cavernous sinus, Onyx liquid embolic agent (Figure 3) is injected to occlude the vein and block the fistula. Post procedure angiogram shows complete occlusion of the fistula (Figure 4).



Figure 3: Unsubtracted lateral view of the skull shows Onyx liquid embolic agent (arrow) within the cavernous sinus. This is the recipient vein and the site of the fistula and now with its occlusion, the fistula is occluded.

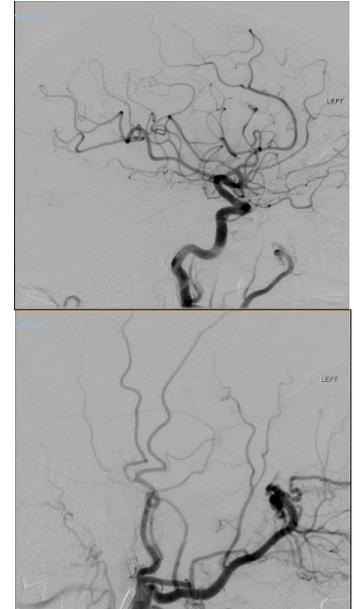


Figure 4: Common carotid (A) and selective external injection (B) show complete occlusion of the dural arteriovenous fistula of the cavernous sinus.

PATIENT OUTCOME

- The patient was discharged home on post operative day #1.
- Following the procedure, there was rapid resolution of the diplopia. Intraocular pressures initially in the 30's, returned to normal values post procedure.

DISCUSSION

A dural carotid-cavernous fistula (CCF) results from an abnormal communication between the arterial and venous systems within the cavernous sinus in the skull. The classical triad of pulsating exophthalmos, conjunctival chemosis, and pulsatile-tinnitus are well-established clinical symptoms of the disease. With time, retrograde flow into cortical veins can occur and this can result in subarachnoid hemorrhage with rupture of these cortical veins. These are curable lesions with occlusion of the recipient vein; in this case the cavernous sinus, resulting in blockage of the fistula. Clinical resolution is often dependent on duration of symptoms with longer duration prior to cure having less chance of complete recovery. In the case presented here, the patient had satisfactory recovery, as he was symptomatic for only one month prior to cure of the fistula. Diagnosis in these cases is often delayed as infectious and inflammatory causes are often suspected first and treatment instituted based on this initial misdiagnosis.

Division of Interventional Neuroradiology – A Leader in Neurovascular Care and Research

- Invented the Merci retriever – the 1st endovascular device for acute stroke therapy
- Invented GDC and Matrix coils – the leading tool for aneurysm treatment around the world
- Developed Onyx liquid embolic material – the leading therapy for brain vascular malformations



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