For more information or to refer a patient, contact:

Aclan Dogan, MD
3303 SW Bond Avenue
Portland, OR 97239
(w) 503-494-2360
(c) 503-484-8614
(f) 503-494-7161
(e) *dogana@ohsu.edu*

OHSU Neurological Surgery
Mail code: CH8N
Center for Health & Healing
3303 S.W. Bond Avenue
Portland, OR 97239
tel 503 494-4314
fax 503 494-7161
www.ohsu.edu/neurosurgery

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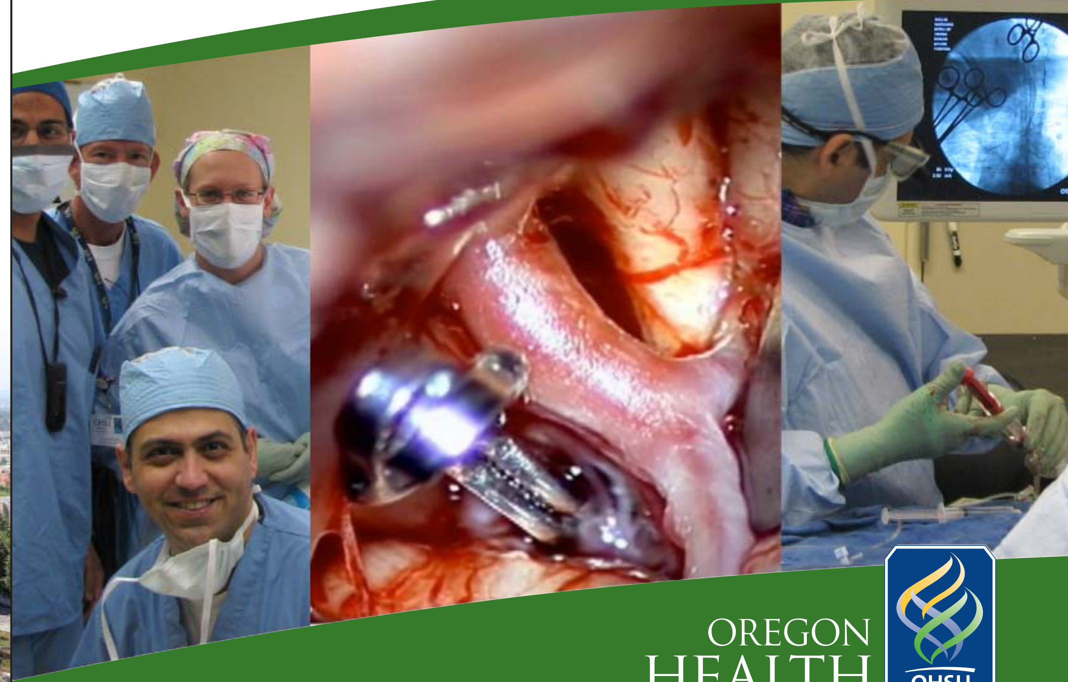
OHSU Neurological Surgery

Neurosurgical Case of the Month by Aclan Dogan, MD

June 2009: Occipital artery to PICA bypass for treatment of VA-PICA aneurysm



Occipital artery to PICA bybass for VA-PICA aneurysm

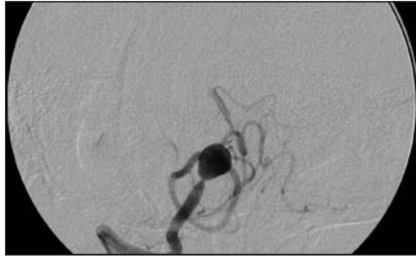
Patient history and diagnosis

An otherwise healthy 48-year-old male presented with: recent voice changes and hoarseness, vision problems, headache and increasing dizziness.

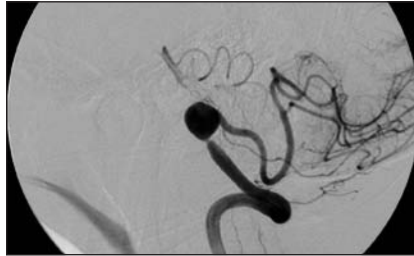
- was found to have a vertebral artery-PICA dissecting aneurysm
- has been taking coumadin for a while
- denies any difficulties with double vision, numbness or facial weakness, any history of seizures, extremity numbness or weakness, or gait difficulty.

Neurological Examination Results:

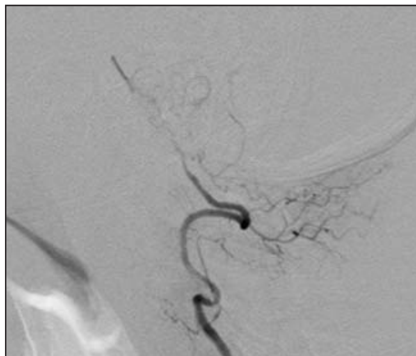
Mental status: Normal consciousness, orientation, affect and fluency
Cranial Nerves: II-XII intact on detailed examination
Motor: Normal strength, muscle bulk, and tone
Sensory: Intact to pinprick and light touch
Cerebellar: Normal finger-to-nose and rapid alternaing movements
Gait: Normal, Tandem and Romberg negative
Deep Tendon Reflexes: Present and normoactive
Pathologic Reflexes: Absent



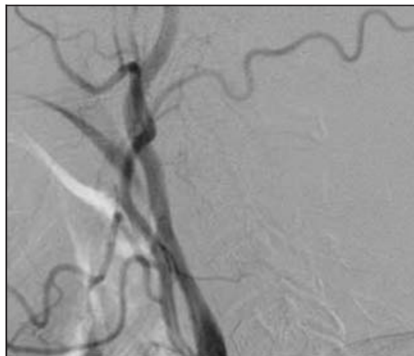
Right AP vertebral artery angiogram: Shows dissecting aneurysm and minimal blood flow to the basilar artery.



Right lateral vertebral artery angiogram: Shows dissecting aneurysm, PICA is originating from the dome of the aneurysm and there is minimal blood flow to the basilar artery.

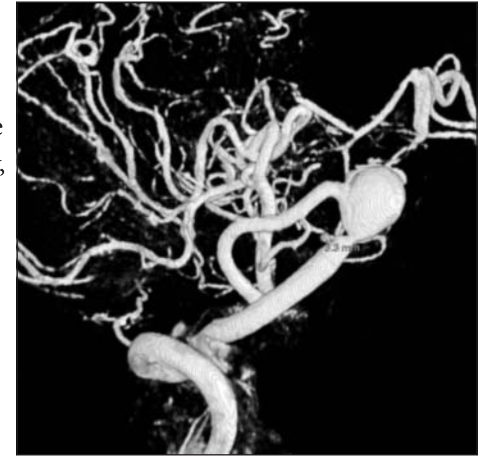


Left lateral vertebral artery angiogram: Shows hypoplastic vessel and very limited blood flow to the basilar artery.

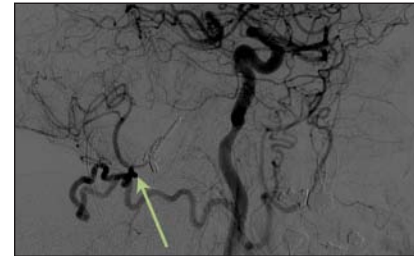


Right lateral carotid artery angiogram: Shows good size occipital atery for possible by-pass surgery.

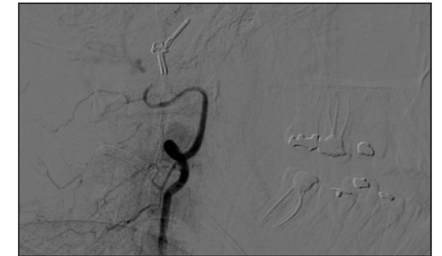
Plan and Surgical Treatment



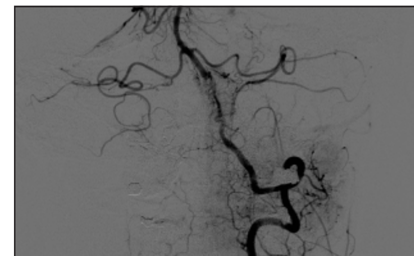
Endovascular coiling of the PICA dissecting aneurysm presents significant risk for a PICA stroke as the origin is the aneurysm dome. Similarly, surgical clipping and reconstruction of this aneurysm presents the same risk. Therefore right occipital artery to right PICA by-pass anastomosis and trapping of the aneurysm is planned. A right far lateral craniotomy was performed and the right occipital artery harvested. Initially the occipital artery was anastomosed to the televelotonsillar segment of the PICA using 10/0 suture. The aneurysm was then trapped with clips between the proximal PICA and the distal vertebral artery.



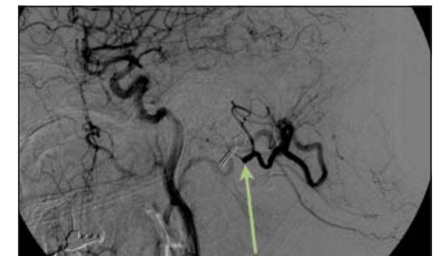
Postoperative lateral right carotid angiogram: Shows patent and open anastomosis between occipital artery and PICA



Postoperative lateral right vertebral artery angiogram: Shows occulsion of VA and aneurysm withougt any residual filling.



Postoperative AP left vertebral artery angiogram: Shows no aneurysm filling but basilar artery flow has improved significantly



Right lateral carotid artery angiogram at 4 months post-op: Shows patent occipital artery to PICA anastomosis

Outcome

Postoperatively the patient was neurologically intact with no neurological deficit during postoperative follow up.