

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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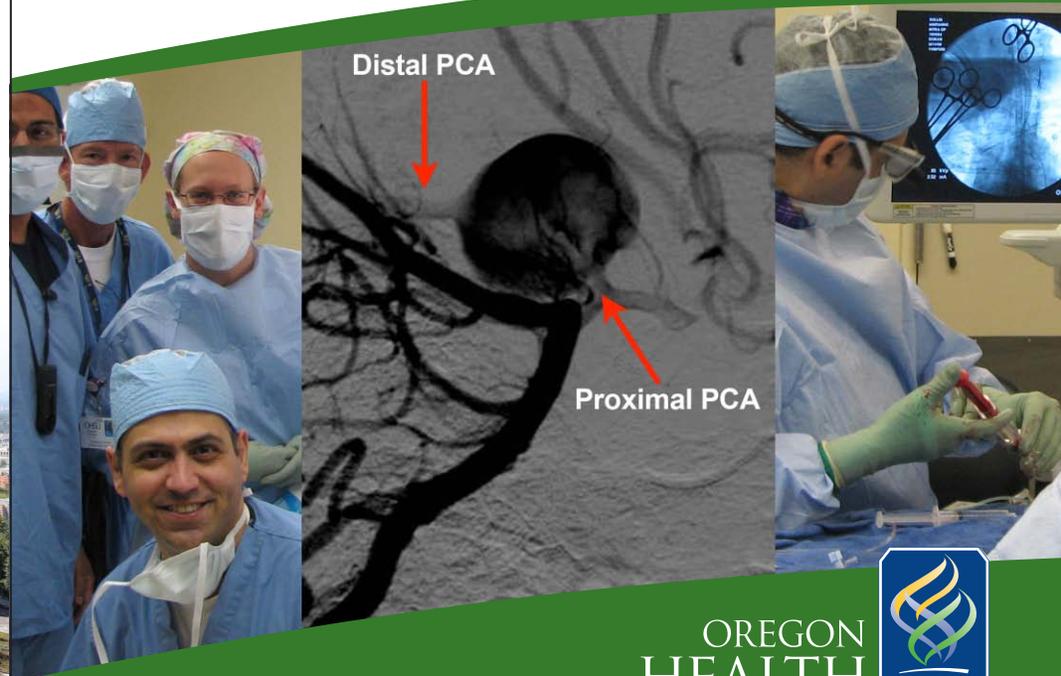


OHSU Neurological Surgery

Neurosurgical Case of the Month by Aclan Dogan, MD

August 2009:

Large Fusiform Aneurysm of P1-P2 segment



Large Fusiform Aneurysm of P1-P2 segment

Patient history and diagnosis

An otherwise healthy 14-year-old male presented with a history of severe headache, nausea and vomiting for approximately 2 weeks:

- unable to keep down food for several days
- denied any visual changes, weakness, or seizure
- no past medical or surgical history.

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 alternating movements

Gait: Normal, Tandem and Romberg negative

Deep Tendon Reflexes: Present and normo-active

Pathologic Reflexes: Absent

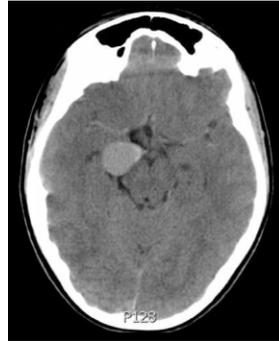


Figure 01: CT scan shows aneurysm type lesion possibly arising from the posterior communicating artery/posterior cerebral artery on the right side.

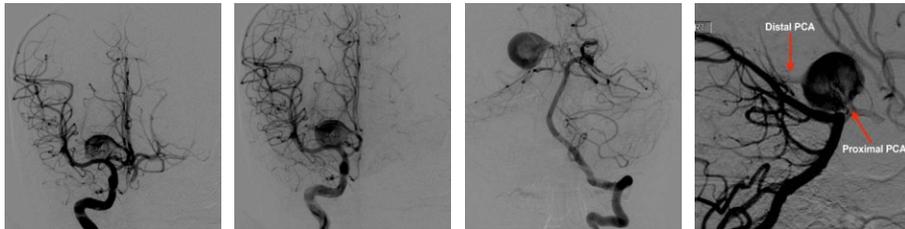


Figure 02: Cerebral angiography shows a 20 x 18mm fusiform aneurysm of the right P1-P2 junction of the PCA.

Plan and Surgical Treatment

Headache was most likely due to acute enlargement of a fusiform aneurysm, arising from the posterior communicating artery/posterior cerebral artery on the right side, which was at extreme risk for rupture, catastrophic subarachnoid hemorrhage and death.

An ideal treatment is cutting of aneurysm from the circulation and avoiding stroke by keeping the posterior cerebral artery (PCA) intact.

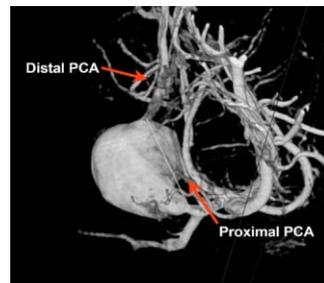


Figure 03: 3D angiogram, which shows the aneurysm in more detail.

One approach would be trapping the aneurysm surgically and performing bypass surgery to the distal PCA. In this particular case due to aneurysm locale that would have proved extremely difficult and carried a high risk for distal PCA occlusion.

Alternatively, (after the family agreed) a stent was placed into the PCA from proximal P1 (proximal to the aneurysm neck) to distal P2 (distal to the aneurysm neck) and aneurysm embolization was performed with Guglielmi Detachable Coils (GDC) coils. With this procedure rupture can be prevented by securing the dome of the aneurysm and keeping the PCA intact, although there is always a risk of stent occlusion. Preoperatively, the patient was placed on acetylsalicylic acid (ASA) and plavix. For further protection two stents were placed prior to embolization.

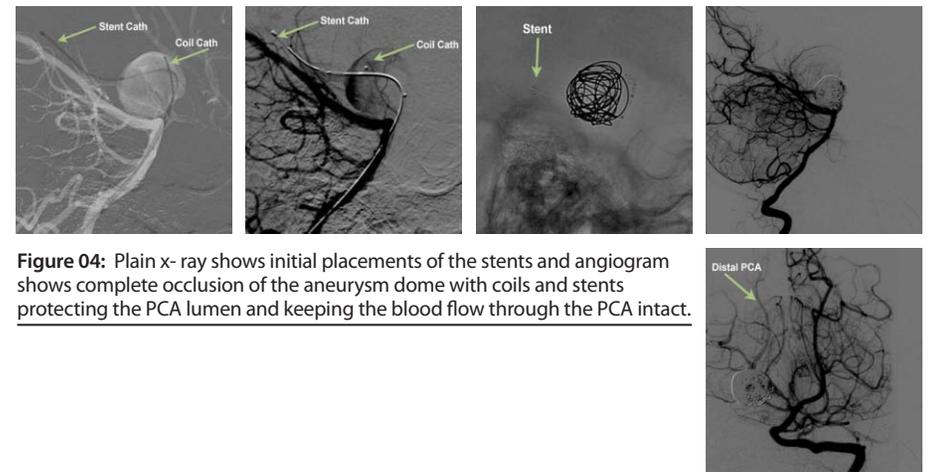


Figure 04: Plain x-ray shows initial placements of the stents and angiogram shows complete occlusion of the aneurysm dome with coils and stents protecting the PCA lumen and keeping the blood flow through the PCA intact.

Outcome

Postoperatively, the patient was neurologically intact with no new neurological deficit at postoperative follow up.



Figure 05: A 3-month follow up angiogram shows complete occlusion of the dome of the aneurysm and patent PCA blood flow.