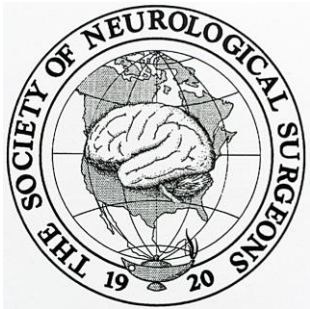


Introduction to Neurosurgical Subspecialties:

Vascular and Endovascular Neurosurgery

Brian L. Hoh, MD¹ and Gregory J. Zipfel, MD²

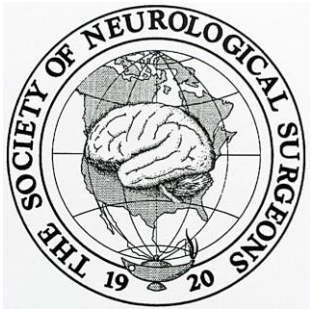
¹University of Florida, ²Washington University



THE SOCIETY OF NEUROLOGICAL SURGEONS

Vascular Neurosurgery

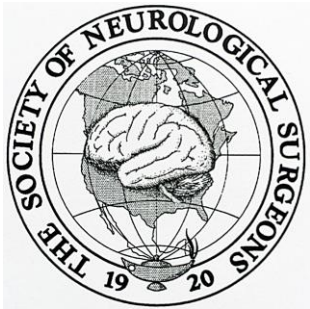
- Vascular neurosurgeons treat patients with:
 - Cerebral aneurysms
 - Brain and spinal AVMs
 - Dural AVFs
 - Cavernous malformations
 - Intracerebral hemorrhage
 - Ischemic stroke / Carotid stenosis



THE SOCIETY OF NEUROLOGICAL SURGEONS

Vascular Neurosurgery

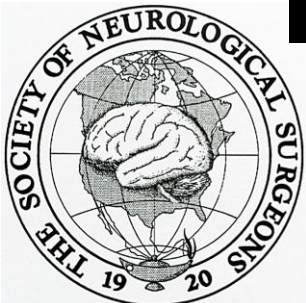
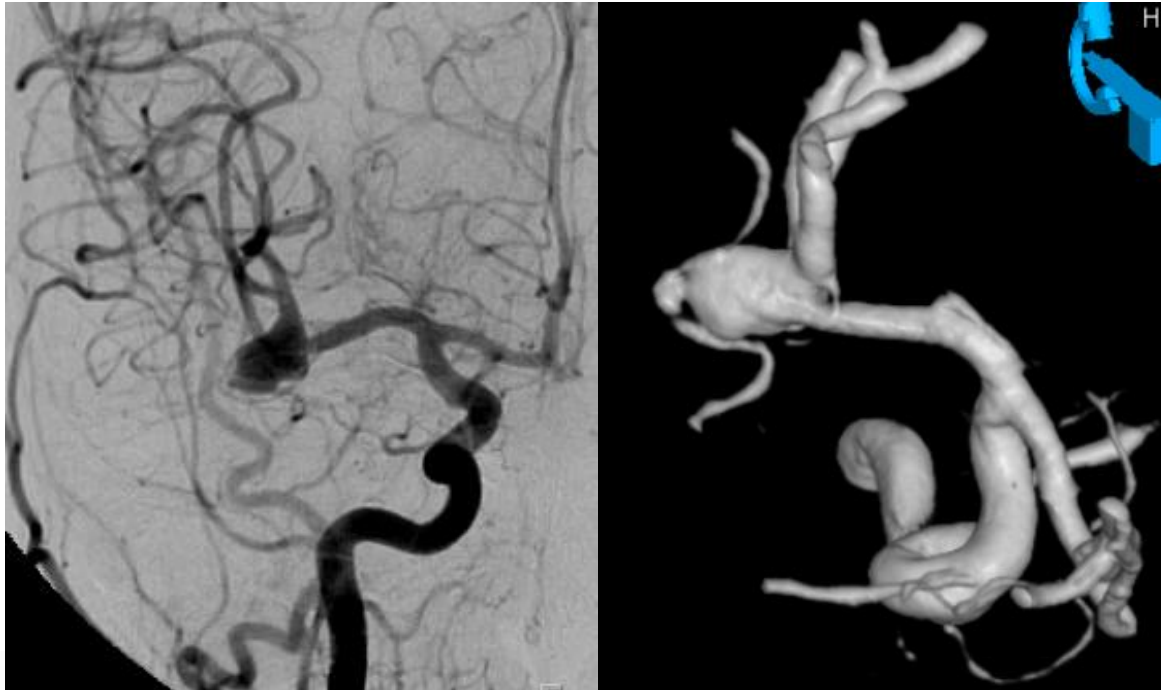
- Fellowship not required, but some neurosurgeons opt for further specialized training in open vascular surgery via fellowship
- Frequently combined with specialized training in endovascular neurosurgery
- While neurosurgeons only can do open intracranial vascular surgery, radiologists and neurologists can also do fellowship training in endovascular treatment



THE SOCIETY OF NEUROLOGICAL SURGEONS

Case Illustration #1

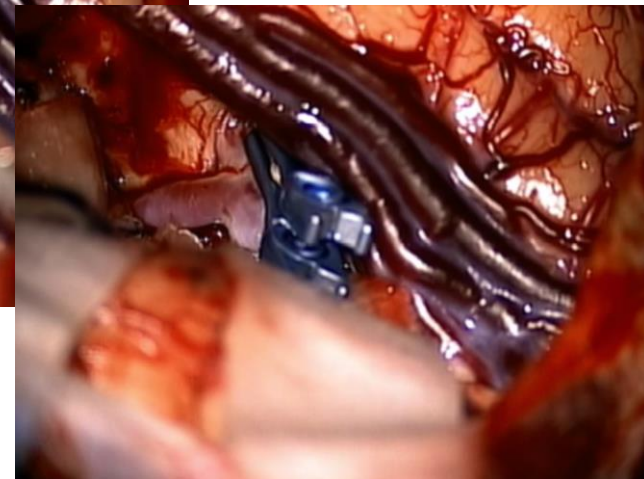
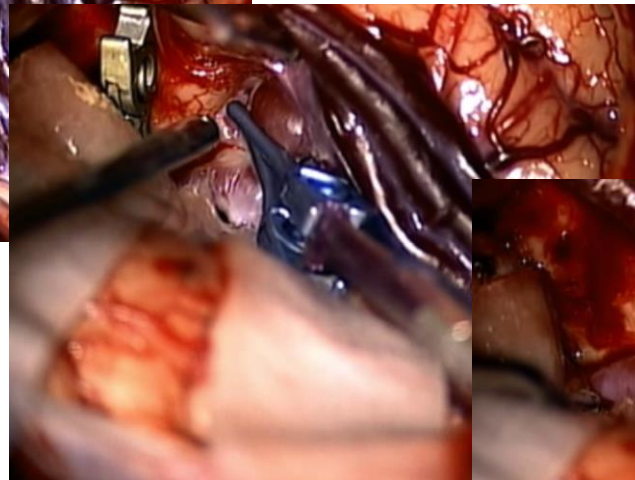
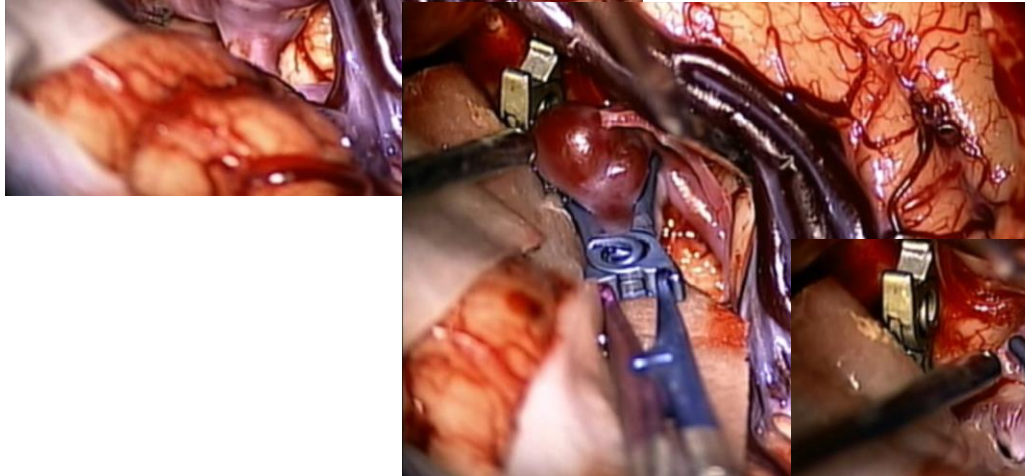
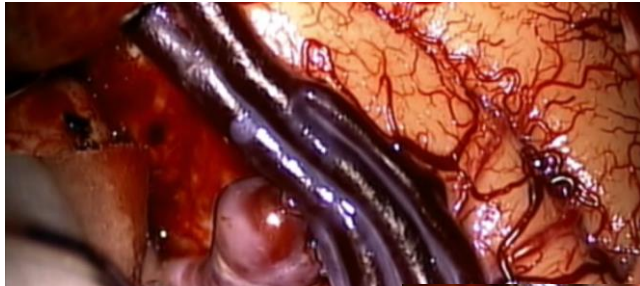
- 45 yo female with incidental MCA aneurysm



THE SOCIETY OF NEUROLOGICAL SURGEONS

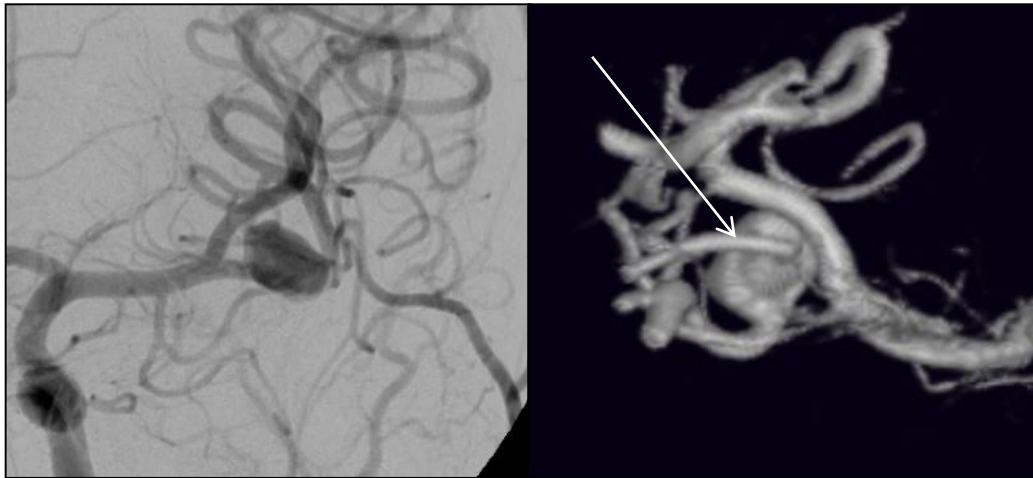
Case Illustration #1

Tandem clipping
technique of MCA
aneurysm

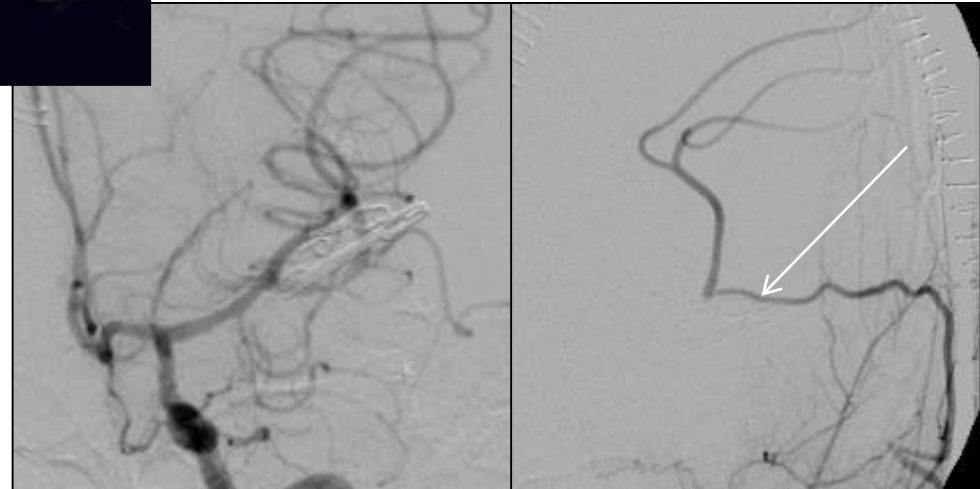


Case Illustration #2

- 15 yo male with seizure; left MCA aneurysm



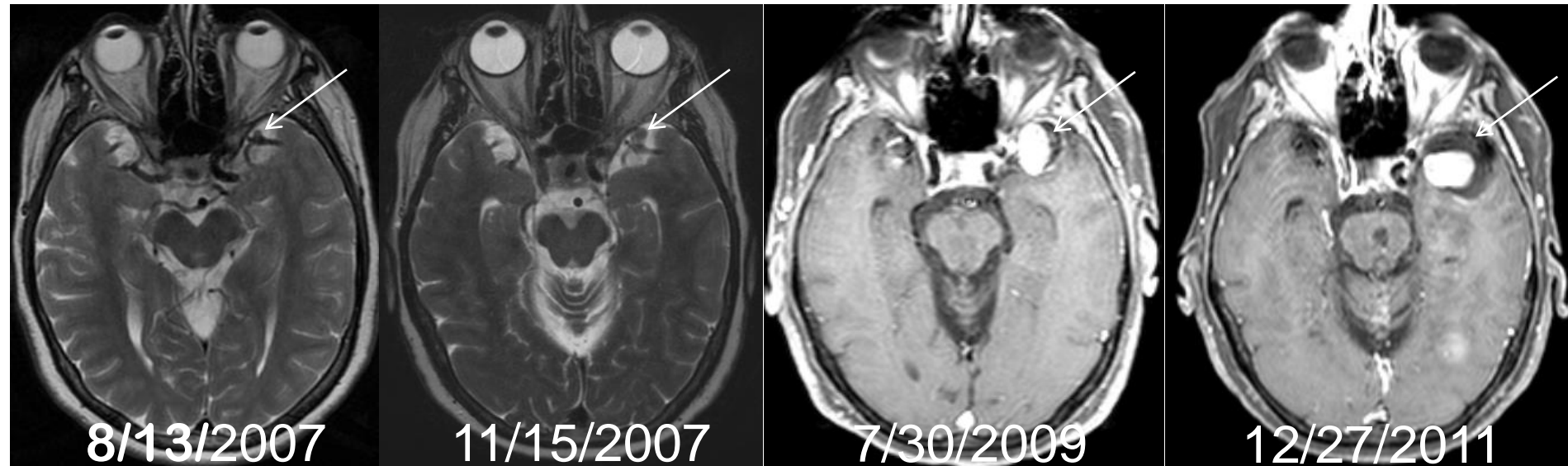
Large fusiform left MCA aneurysm incorporating frontal M2 branch (arrow)



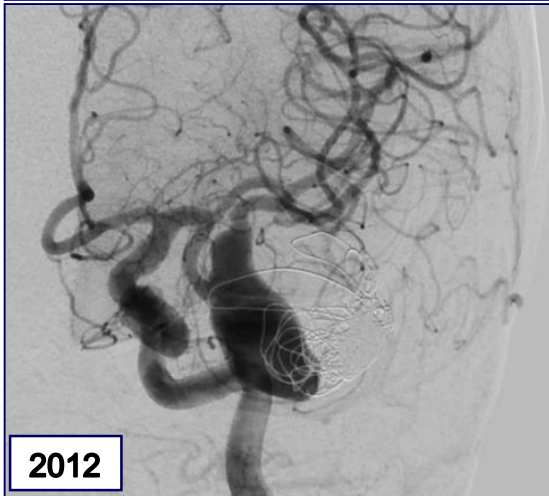
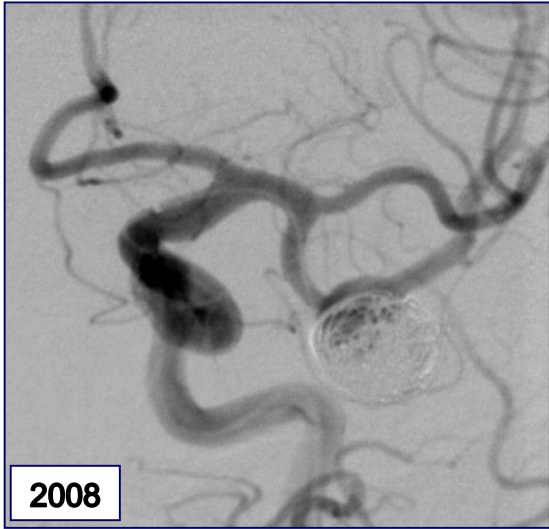
STA-MCA bypass (arrow) + aneurysm clipping

Case Illustration #3

- 70 yo female with enlarging giant left MCA aneurysm s/p previous coiling



Case Illustration #3



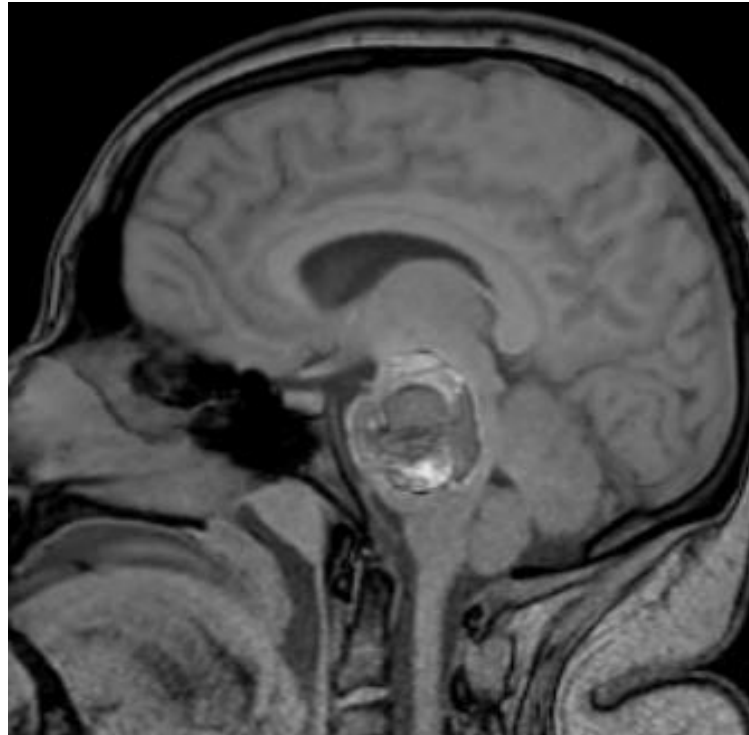
Recurrent giant left MCA aneurysm s/p coiling



Radial artery high flow bypass (arrows) + aneurysm trapping

Case Illustration #4

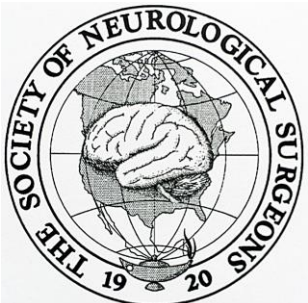
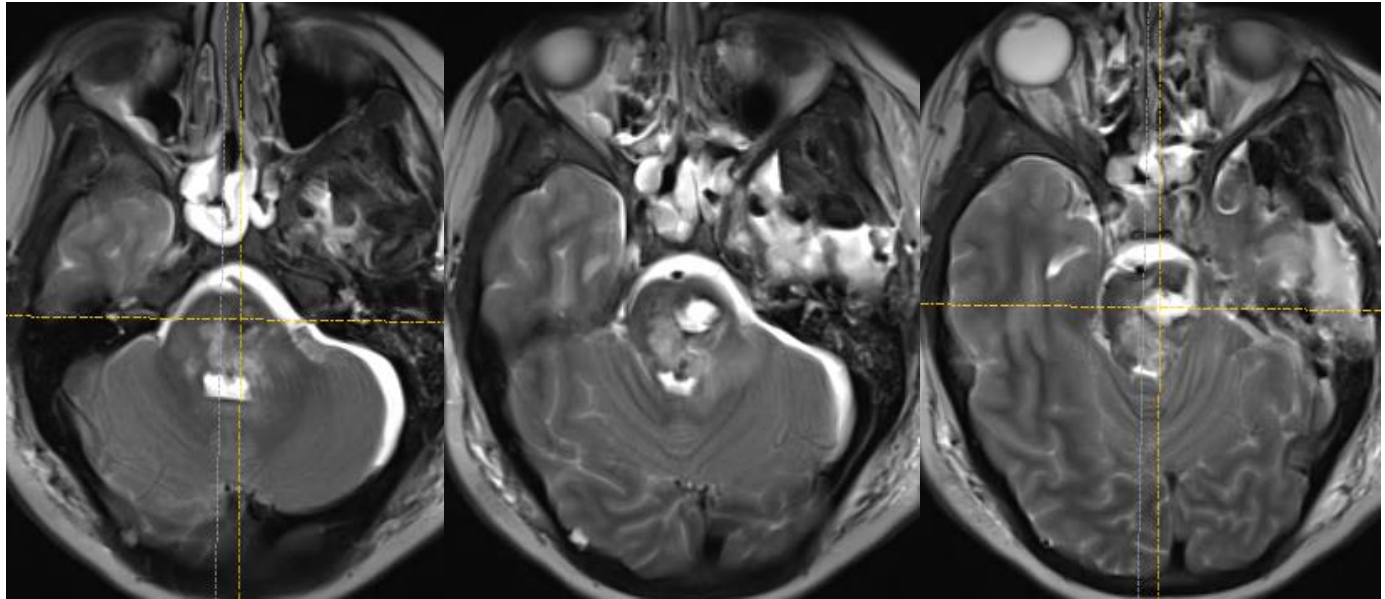
- 12 yo girl presents with headache, nausea, vomiting, ataxia, lethargy, and right hemiparesis; Brainstem cavernous malformation on MRI



Case Illustration #4

- Subtemporal craniotomy + petrosectomy for resection of brainstem cavernous malformation

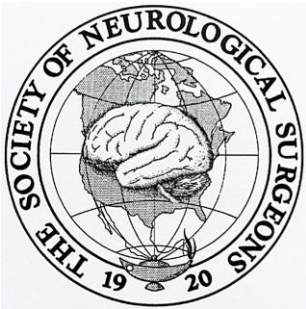
Post-op
MRI



THE SOCIETY OF NEUROLOGICAL SURGEONS

Endovascular Neurosurgery

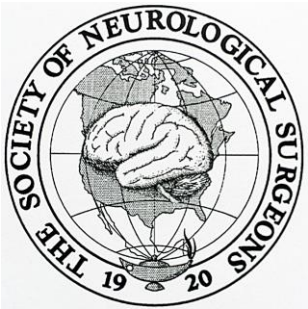
- Endovascular neurosurgeons treat patients with:
 - Cerebral aneurysms
 - Vasospasm
 - Brain and spinal AVMs
 - Dural AVFs
 - Ischemic stroke
 - Carotid stenosis
 - Tumors
 - Head and neck bleeding



THE SOCIETY OF NEUROLOGICAL SURGEONS

Endovascular Neurosurgery

- Neurosurgeons, neurologists, and neuroradiologists can specialize in endovascular
- Fellowship is typically required

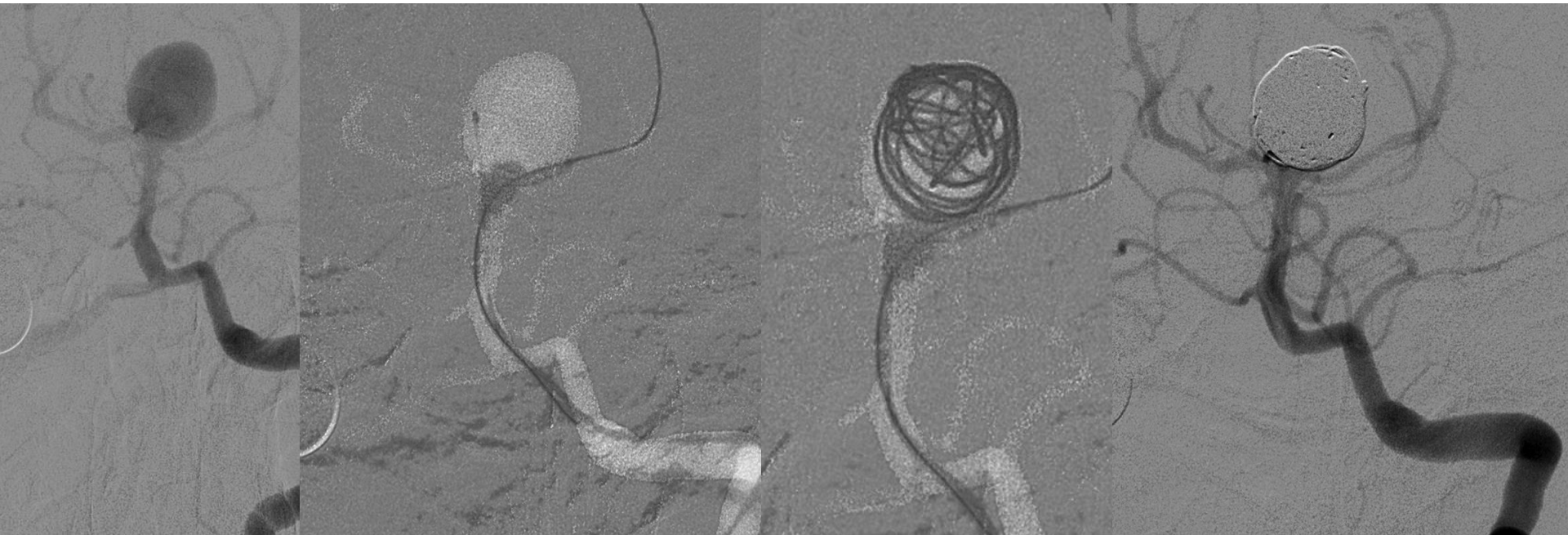


THE SOCIETY OF NEUROLOGICAL SURGEONS

Endovascular Neurosurgery

Case Illustration #1

- 67 year old woman with SAH from ruptured basilar tip aneurysm



Endovascular Neurosurgery

Case Illustration #2

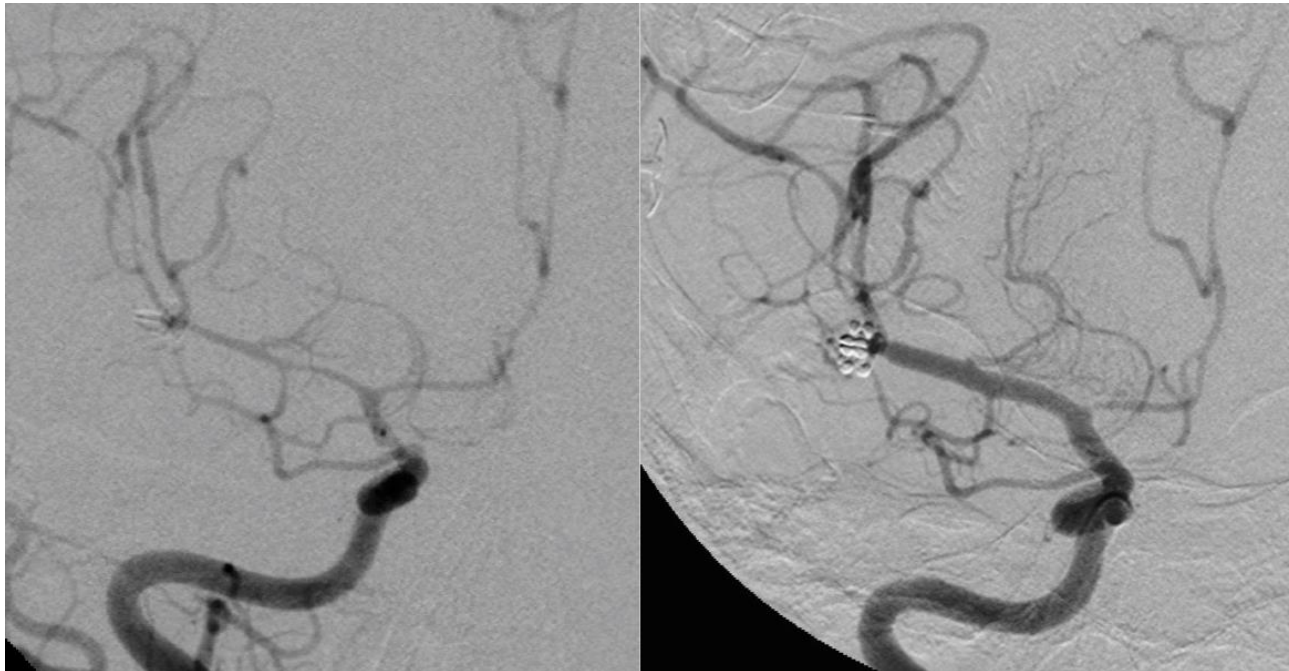
- 69 year old woman with left CN3 palsy
- Treated with Pipeline stent, left CN3 palsy resolved



Endovascular Neurosurgery

Case Illustration #3

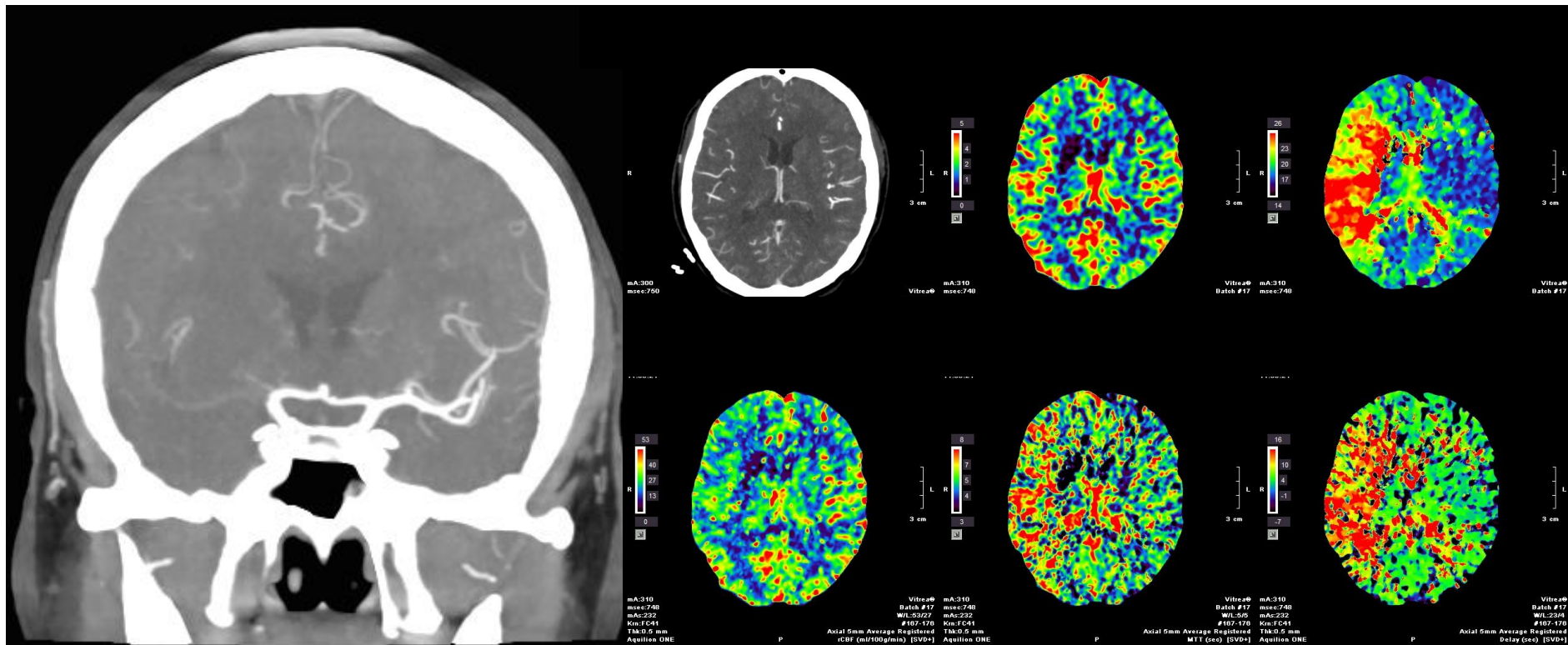
- Patient POD#5 s/p clipping of ruptured right MCA aneurysm develops left hemiparesis
- Balloon angioplasty



Endovascular Neurosurgery

Case Illustration #4

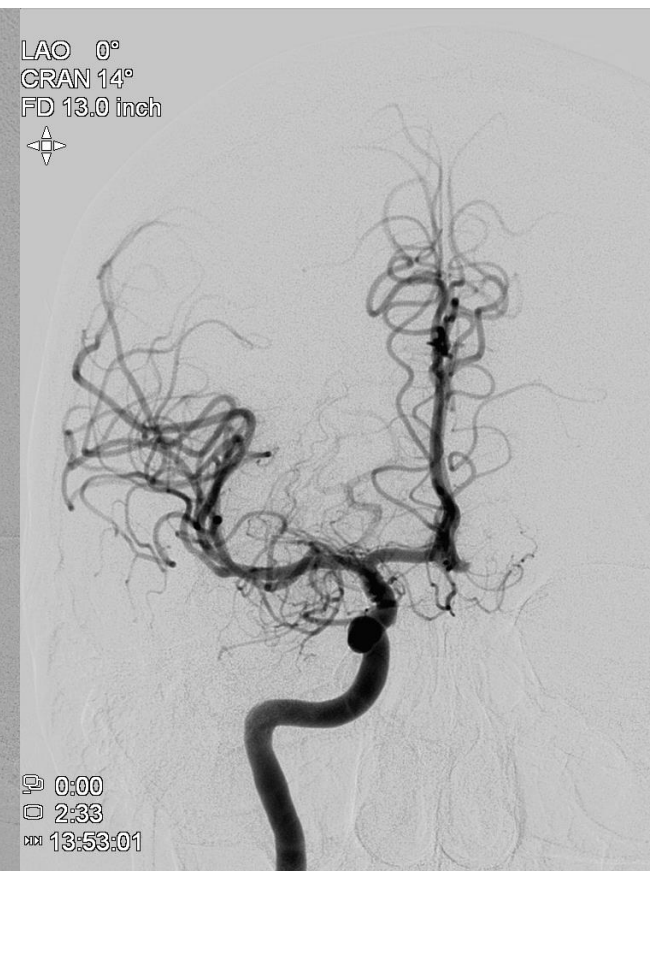
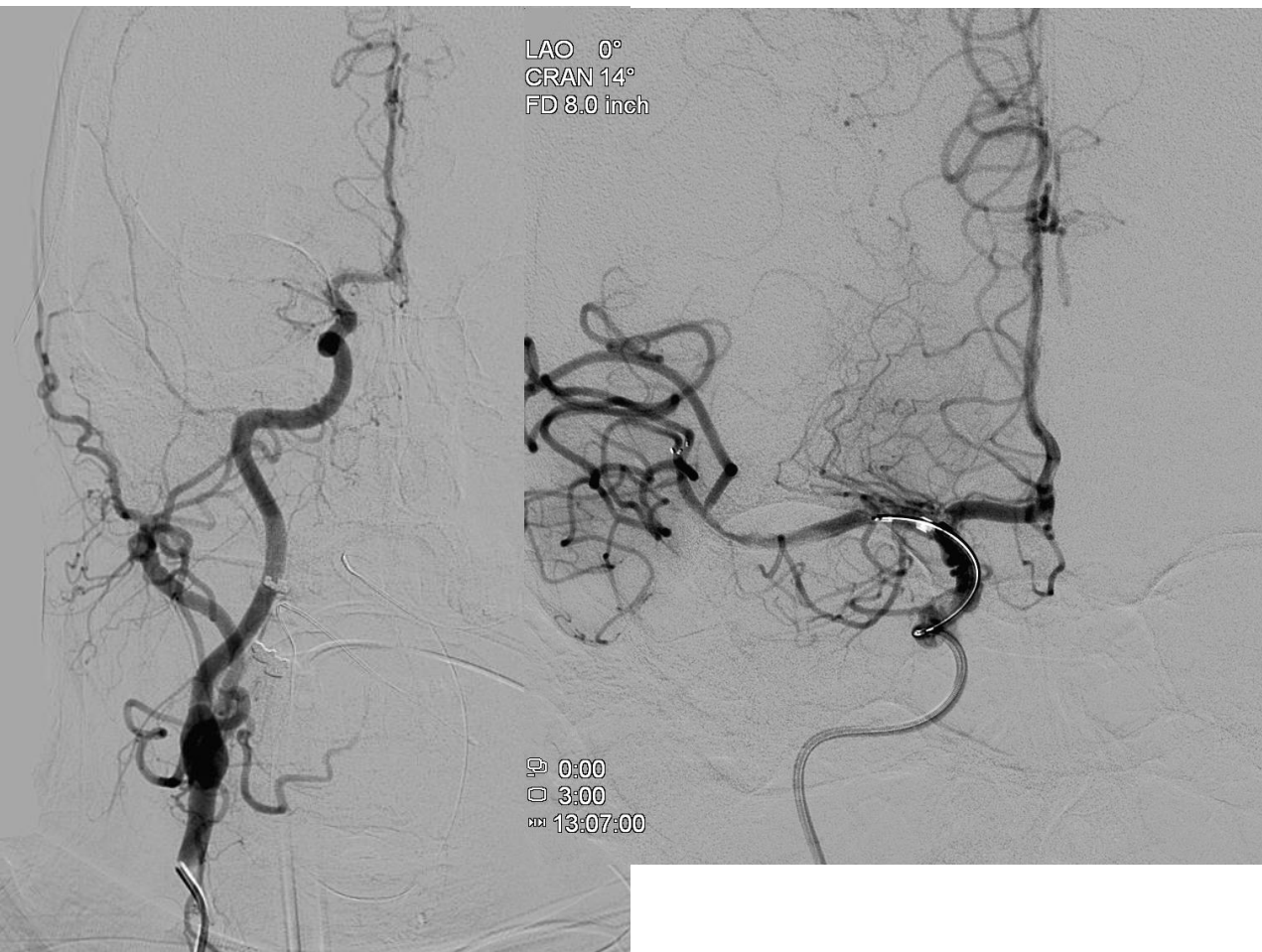
- 59 year old woman with ischemic stroke presenting with left facial droop, left hemiparesis, dysarthria



Endovascular Neurosurgery

Case Illustration #4

- Endovascular embolectomy



Endovascular Neurosurgery

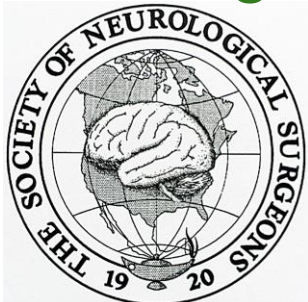
Case Illustration #5

- 68 year old man s/p neck surgery and radiation therapy for neck cancer, now with TIAs of right hemiparesis
- Angioplasty and stenting



Conclusions

- Vascular neurosurgery is an large and intensive subspecialty of neurosurgery
- Vascular patients can be extremely critically ill
- Endovascular techniques are an indispensable part of vascular neurosurgery
- Fellowship training is required for endovascular privileges.
- While not required, many surgeons do opt for further fellowship training for open vascular surgery as well



THE SOCIETY OF NEUROLOGICAL SURGEONS