Contents

Videos

Video 1: Identification, management, and treatment of acute ischemic stroke.

Video 2: A 21-year-old woman born in Mexico (speaking Spanish only) presented 9 weeks pregnant with sudden-onset holocephalic headache associated with nausea, vomiting, dizziness, and blurred vision. CT angiogram demonstrated a distal basilar artery occlusion. She had a successful mechanical thrombectomy. Brain MRI showed acute infarction of the right medial occipital/posterior temporal lobe, as well as the bilateral superior cerebellum and the superior vermis. MR angiography showed occlusion of the right posterior cerebral and left superior cerebellar arteries. There was no residual basilar artery thrombus. Transesophageal echocardiogram showed a patent foramen ovale (PFO) with right-to-left shunt with provocation. MR venogram of the pelvis showed mild compression of the left common iliac vein by the right common iliac artery probably representing May-Thurner syndrome. The patient received subcutaneous low-molecular-weight heparin throughout her pregnancy. Several months postpartum she had percutaneous PFO closure. She has remained stable without recurrent transient ischemic attacks (TIAs) or strokes and had a second uneventful pregnancy. Neurologic examination 5 years after index stroke only showed a residual left homonymous superior quadrantanopia.

Video 3: Medical imaging for acute ischemic and hemorrhagic stroke.

Video 4: Video review of the current use of telestroke, which has rapidly grown throughout the United States as a robust and effective modality of providing acute ischemic stroke care.

Video 5: Innovations in prehospital management of stroke.

Video 6: Intravenous fibrinolysis for acute ischemic stroke.

Video 7: Identifying patients for stroke thrombectomy.

Video 8: Stroke certification.

Video 9: Video review of the critical care management after acute ischemic stroke. The first 24 to 48 hours following acute ischemic stroke, especially for those who received stroke intervention, requires close monitoring in the critical care unit to reduce the risk of secondary brain injury, as well as to prevent the occurrence of other medical complications.

Video 10: Critical care management for hemorrhagic stroke.

Video 11: Critical care management of subarachnoid hemorrhage and vasospasm.

Video 12: Management of anticoagulation and antiplatelets in hemorrhagic stroke.

Video 13: Acute ischemic stroke: prototype case, workup, and management.

Video 14: Prognostication, ethics, and scales.

Video 15: Multimodal monitoring in acute brain injury: advanced monitoring. The video is a summary of Chapter 15, Advanced Neuromonitoring in Acute Brain Injury that includes definitions of multimodal monitoring (MMM) and important neurophysiologic equations in the management of patients with acute brain injury, as well as various MMM brain injury modalities including TCD, NIRS, ICP, and other common neuro-ICU monitoring methods.

Video 16: Transcranial Doppler in the ICU.

Video 17: Brain death: neurologic evaluation.

Video 18: Adenosine-assisted permanent clip repositioning. Adenosine, at a dose of 0.3 to 0.4 mg/kg, is given intravenously, in close collaboration with the surgeon, to facilitate permanent clip repositioning. The clip is adjusted when asystole occurs, followed by an approximately 45-second period of profound hypotension, to allow for minimal tension on the neck of the aneurysm during this maneuver.

Video 19: EC-IC STA-MCA cerebral bypass with exoscopic assistance in a patient with moyamoya.

Video 20: Moyamoya disease.

Video 21: Carotid endarterectomy technique.

Video 22: Microvascular revascularization of the extracranial vertebral artery.

Video 23: Microsurgery for unruptured aneurysms: principles of patient selection.

Video 24: Clip ligation of a ruptured left MCA aneurysm is demonstrated. An additional, tiny, bystander aneurysm was also clipped. 00:00–00:29: Preoperative CT and angiography reveal diffuse subarachnoid hemorrhage, slightly eccentric to the left Sylvian fissure and a left MCA bifurcation aneurysm projecting from the posterior aspect of the bifurcation. 00:30–00:52: After administration of osmotic diuretics and initial opening of the Sylvian fissure using standard microsurgical technique, the brain begins to relax. 00:53–01:02: The blood within the Sylvian fissure is cleared using dissection, suction, and gentle irrigation. 01:03–01:10: The inferior trunk of the M2 is exposed as is the neck of the aneurysm and proximal aspect of the superior M2 trunk. 01:11–01:21: A temporary clip is applied to the M1segment after pharmacologically induced burst suppression and hypertension. 01:22–01:34: The superior M2 trunk is dissected free of the aneurysm dome. 01:35–01:46: During dissection, a distinct, tiny (approximately 1.5 mm) aneurysm is seen originating from the anterior surface of the MCA bifurcation that was not recognized on the preoperative angiogram. 01:47–02:21: A single, side-angle aneurysm clip is applied to obliterate the aneurysm. 02:22–02:26: An additional mini-clip was applied to the tiny aneurysm and aneurysm muslin was applied between the clips to bolster the diseased MCA bifurcation (02:29–02:36). 02:37–02:44: After clipping, the brain is noted to be relaxed and pulsatile. Much of the original subarachnoid hemorrhage on the exposed frontal and temporal cortex has been washed away. Oxidized cellulose (Surgicel®) is noted on the frontal lobe adjacent to the Sylvian fissure, which was placed to protect the brain during dynamic retraction and is safe to leave in place. 02:45–02:50: Postoperative angiography reveals complete obliteration of the aneurysms and mild to moderate distal M1 and proximal M2 segment vasospasm.

Video 25: Microsurgical nuances in the management of arteriovenous malformations.

Video 26: 0:00: Macroscopic view of craniotomy to establish orientation of presigmoid craniotomy. 0:14: Pia arachnoidal incision is made. 0:19: Identification of liquid clots with subsequent aspiration for decompression. 1:00 - Low magnification view of decompression. 1:19 - Additional liquid clot evacuation from contralateral side of cavernoma. 1:40 - Now that lesion is decompressed, cauterization is performed with subsequent division of feeding and draining vessels. 1:54: The capsule is dissected from hemosiderin-stained brainstem without use of thermal device/cautery. 2:02: Ringed forceps are utilized to further establish the plane of resection. 2:30: Removal of malformation en bloc or piecemeal through careful dissection without damage to proximal brainstem tissue. 2:40: With gentle pressure and utilization of cottonoids, pathologic remnants are identified and final hemostasis is accomplished. 3:09: Hemosiderin margin is not disrupted in eloquent tissue.

Video 27: Microsurgical disconnection of a ruptured ethmoidal dAVF. 00:00–0:15: Computed tomography reveals diffuse subarachnoid hemorrhage. 00:16–00:28: Angiography shows a ruptured ethmoidal dAVF fed by the anterior ethmoidal artery on the right with a large, arterialized cortical draining vein. 00:29–00:38: After a standard frontotemporal craniotomy, the brain was edematous, making dissection under the frontal lobe a challenge. The operative portion of the video begins with opening the lamina terminalis to relax the brain and gain visualization of the anterior skull base. 00:39–01:10: Initial dissection over the optic nerve and gentle subarachnoid irrigation clear the blood from the field and allow initial visualization of the arterialized draining vein. 01:11–01:44: Once identified, the draining vein is followed to the anterior skull base and a temporary clip is applied. 01:45–02:50: The draining vein is then coagulated, the temporary clip is then exchanged with a more distally placed clip, and the vein is again coagulated and divided. 02:51–04:00: The anterior skull base is explored. The vein is coagulated to the point of egress from the anterior skull base dura. The dura of the cribriform plate and crista galli is coagulated, and the aneurysm clip is removed. 04:01–04:17: The surgical field is inspected to ensure the fistula is disconnected and the subarachnoid space is cleared of blood as best as possible. 04:18–04:29: An intraoperative angiogram confirms disconnection of the fistula and angiographic cure.

Video 28: Technical nuances of decompressive craniectomy and duraplasty: This video provides intraoperative photos describing how to perform a decompressive hemicraniectomy with duraplasty for malignant stroke or intracranial hemorrhage, including pearls and pitfalls to maximize technical success and minimize complications.

Video 29: Minimally invasive approaches for intracerebral hemorrhage and intraventricular hemorrhage.

Video 30: Radiosurgical management of arteriovenous malformations.

Video 31: Revolution of stroke treatment: mechanical thrombectomy.

Video 32: A summary of Chapter 32, Intracranial Atherosclerotic Disease is provided along with illustrated cases to explain decision-making and management of ICAD.

Video 33: Endovascular stenting of carotid artery stenosis.

Video 34: Vertebral origin stent: self-expanding and balloon mounted.

Video 35: Demonstration of coiling a right internal carotid artery aneurysm.

Video 36: Intracerebral vasospasm.

Video 37: Uncomplicated treatment of an incidental left superior hypophyseal aneurysm with the pipeline embolization device (PED). Adequate endothelialization of the PED is evident 6 months post treatment, with complete occlusion of the aneurysm.

Video 38: Extracranial and intracranial dissection approaches.

Video 39: Endovascular treatment of arteriovenous malformations.

Video 40: Endovascular approaches to intracranial dural arteriovenous malformations.

Video 41: Venous thrombectomy for intracranial venous sinus thrombosis.