

Aaron A. Cohen-Gadol, M.D., M.Sc.

Neurosurgeon



Specialty Areas

Skull Base and Cerebrovascular Surgery
Epilepsy Surgery and Brain Mapping

Medical School

University of Southern California (USC)
Keck School of Medicine, Los Angeles, CA 1993-1997
M.D. Degree with Highest Distinction, May 1997

Residency

University of California, San Diego
San Diego, CA, July 1997 – June 1999

Neurological Surgery, Mayo Clinic
Rochester, MN, July 1999 - June 2002

Chief Resident Associate
Mayo Clinic
Rochester, MN, July 2004 - June 2005

Master's Degree

Clinical Research - Mayo Graduate School
Rochester, MN, July 2003 - June 2005

Fellowships

Epilepsy Surgery and Brain Mapping/Tumor Surgery
Pediatrics and Adults
Mentor: Dr. Dennis D. Spencer
Yale University
New Haven, CT, July 2002 - June 2003

Stereotactic/Functional Neurosurgery
Movement Disorders/Radiosurgery/Pain
Mentor: Dr. Antonio A.F. De Salles
University of California at Los Angeles (UCLA)
Los Angeles, CA, July 2005 - October 2005

Skull Base/Cerebrovascular Surgery
Mentors: Drs. Al-Mefty, Yaşargil, and Krisht
University of Arkansas Medical Sciences Center (UAMS)
Little Rock, AR, November 2005 - June 2006

Board Certifications and Licensure

Board Certified: American Board of Neurological Surgery (ABNS)
Indiana: Number 01062386A
California: Number A68020
Minnesota: Number 42401
Arkansas: Number E-4433

Hospital Affiliations

Methodist Hospital
St. Vincent Hospital

Experience

University of California at Los Angeles (UCLA)
Attending Neurosurgeon
Los Angeles, CA
July 2005 - October 2005

University of Arkansas Medical Sciences Center
Instructor in Neurosurgery
Attending Neurosurgeon
Little Rock, AR
November 2005 - June 2006

Arkansas Children Hospital
Attending Neurosurgeon
Little Rock, AR
November 2005 - June 2006

Indianapolis Neurosurgical Group (ING)
Clarian Neuroscience Center (Methodist, Indiana University, and Riley Hospitals)
Clinical Assistant Professor
Indiana University Department of Neurosurgery
Indianapolis, IN
September 2006 - present

Professional Memberships

American Association of Neurological Surgeons (AANS)
Congress of Neurological Surgeons (CNS)
Council of State Neurosurgical Societies (CSNS)
American Epilepsy Society (AES)
International Brain Mapping and Intra-operative Surgical
Planning Society (IBMISPS)
The Hemispherectomy Foundation – Co-Chair of the Medical Advisory Board

Books/Book Chapters

Cohen-Gadol, A. A., and D. D. Spencer. *The Legacy of Harvey Cushing: Profiles of Patient Care*. Thieme, New York 2007.

Melamed, I., and A. A. Cohen-Gadol. Early post-surgical management of patients with epilepsy. In *Textbook of Epilepsy Surgery*, edited by H. Luders et al (in press).

Connolly, P. J., D. D. Spencer, and A. A. Cohen-Gadol. History of Epilepsy Surgery. In *Textbook of Epilepsy Surgery*, edited by H. Luders et al (in press).

Cohen-Gadol, A. A. and O. Al-Mefty. Skull Base Tumors. In *Neuro-Oncology: The Essentials*, edited by M. S. Berger, and M. Bernstein (in press).

Cohen-Gadol, A. A., and D. D. Spencer. MRI-normal medial temporal lobe epilepsy has a less favorable surgical outcome. In *Epilepsy Surgery: Principles and Controversies* edited by J. W. Miller et al. New York: Taylor & Francis Group, 2006: 100-104.

Publications

Miles PD, Romeo O, Higo K, Cohen-Gadol AA, Rafaat K, Olesky JM. TNF-Alpha induced insulin resistance in vivo and its prevention by Troglitazone. *Diabetes* 46:1678-83, 1997.

Miles PD, Hart M, Romeo O, Cheng J, Cohen-Gadol AA, Rafaat K, Moossa AR, Olefsky J. Mechanisms of insulin resistance in experimental hyperinsulinemic dogs. *J Clin Invest* 101: 202-11, 1998.

Chen JC, O'Day S, Morton D, Essner R, Cohen-Gadol AA, MacPherson D, Giannotta SL, Petrovich Z, Yu C, Apuzzo ML. Stereotactic radiosurgery in the treatment of metastatic disease to the brain. *Stereotact Funct Neurosurg* 73(1-4):60-3, 1999.

Lavine SD, Petrovich Z, Cohen-Gadol AA, Masri LS, Morton DL, O'Day SJ, Essner R, Zelman V, Yu C, Luxton G, Apuzzo ML. Gamma knife radiosurgery for

metastatic melanoma: An analysis of survival, outcome, and complications. *Neurosurgery* 44(1):59-66, 1999.

Kadyrov NA, Friedman JA, Nichols DA, Cohen-Gadol AA, Link MJ, Piepgras DG. Endovascular treatment of an internal carotid artery pseudoaneurysm following transphenoidal surgery. Case Report. *J Neurosurg* 96(3):624-7, 2002.

Wetjen NM, Cohen-Gadol AA, Maher CO, Marsh WR, Meyer FB, Cascino GD. Frontal lobe epilepsy: diagnosis and surgical management. *Neurosurg Rev* 24:119-138, 2002.

Cohen-Gadol AA, Britton JW, Friedman JA, Marsh WR. Transient postictal MR abnormality of the corpus callosum in a patient with epilepsy: Case report and review of the literature. *J Neurosurg* 97:714-717, 2002.

Ecker RD, Goerss SJ, Meyer FB, Cohen-Gadol AA, Britton JW, Levine JA. Vision of the future: Initial experience with real-time intraoperative high-resolution dynamic infrared imaging (DIRI). *J Neurosurg* 97:1460-1471, 2002.

Cohen-Gadol AA, Dekutoski MB, Kim CW, Quast LM, Krauss WE. Safety of supplemental endplate screws in thoracic pedicle hook fixation. *J Neurosurg-Spine* 98:31-35, 2003.

Inoue T, Cohen-Gadol AA, Krauss WE. Low-pressure headaches and spinal cord herniation: Case report. *J Neurosurg-Spine* 98:93-95, 2003.

Cohen-Gadol AA, Britton JW, Wetjen NM, Marsh WR, Meyer FB, Raffel C. Neurostimulation therapies in epilepsy: current modalities and future directions. *Mayo Clin Proc.* 78(2):238-48, 2003.

Cohen-Gadol AA, White CB, Dekutoski MB, Shaughnessy WJ. Arterial-esophageal fistula: A complication of nasogastric tube placement following lumbar spine surgery: Case report. *Spine* 28(5):E98-E101, 2003.

Cohen-Gadol AA, Zikel OM, Scheithauer BW, Krauss WE. Spinal meningiomas in patients under age 50: A 21 year experience. *J Neurosurg-Spine* 98:258-63, 2003.

Cohen-Gadol AA, Zikel OM, Aksamit AJ, Miller GM, Scheithauer BW, Krauss WE. Spinal cord biopsy: A review of 38 cases. *Neurosurgery* 52(4):806-16, 2003.

Cohen-Gadol AA, Stoffman MR, Spencer DD. Emerging surgical and radiotherapeutic techniques for treating epilepsy. *Curr Opin Neurol* 16:213-219, 2003.

Cohen-Gadol AA, Pichelmann MA, Link MJ, Scheithauer BW, Krecke KN, Young WF, Hardy J, Giannini C. Granular cell tumor of the neurohypophysis: a clinicopathologic study of 11 cases. *Mayo Clin Proc* 78:567-573, 2003.

Cohen-Gadol AA, Britton JW, Collignon F, Bates LM, Cascino GD, Meyer FB. Central lobule seizures: the use of awake cortical mapping and subdural grid monitoring for resection of seizure focus. *J Neurosurg* 98: 1255-62, 2003.

Cohen-Gadol AA, Matsumoto JY, Ahlskog JE, Swansen MA, McClelland R, Davis DH. Selective peripheral denervation for intractable torticollis: Experience with 168 patients at the Mayo Clinic. *J Neurosurg* 98: 1247-54, 2003.

Cohen-Gadol AA, Davis DH. Selective peripheral denervation for intractable torticollis: Experience with 168 patients at the Mayo Clinic Editorial response letter [Comment]. *J Neurosurg* 100:172, 2004.

Cohen-Gadol AA, Leavitt JA, Lynch JJ, Marsh WR, Meyer FB, Cascino GD. A prospective analysis of diplopia after temporal lobectomy for mesial temporal lobe sclerosis. *J Neurosurg* 99:496-499, 2003.

Maher CO, Cohen-Gadol AA, Raffel C. Cortical resection for epilepsy in children with linear sebaceous nevus syndrome. *Pediatr Neurosurg* 39: 129-35, 2003.

Cohen-Gadol AA, Koch CA, Raffel C, Spinner RJ. Confirmation of research publications reported by neurological surgery residency applicants. *Surg Neurol* 60: 280-4, 2003.

Mclver JI, Link MJ, Giannini C, Cohen-Gadol AA, Driscoll C. Choroid plexus papilloma and meningioma: coincidental posterior fossa tumors. Case report and review of the literature. *Surg Neurol* 60: 360-365, 2003.

Cohen-Gadol AA, Spencer DD. The use of an antereomedial subdural strip in the evaluation of medial temporal lobe epilepsy - Technical note. *J Neurosurg* 99:921-23, 2003.

Collignon FP, Cohen-Gadol AA, Piepgras DG. Hemangiopericytoma of the confluence of sinuses and the transverse sinuses: Case report. *J Neurosurg* 99:1085-88, 2003.

Cohen-Gadol AA, Spencer DD. Inauguration of pediatric neurosurgery by Harvey W. Cushing: his contributions to the surgery of posterior fossa tumors in children. *J Neurosurg: Peds* 100(2 Suppl):225-31, 2004.

Cohen-Gadol AA, DiLuna ML, Spencer DD. Partial epilepsy presenting as episodic dyspnea: a specific network involved in limbic seizure propagation. *J Neurosurg* 100(3): 565-7, 2004.

Cohen-Gadol AA, Britton, JW, Worrell GA, Meyer, FB. Transient cortical abnormalities on magnetic resonance imaging after status epilepticus – Case report. *Surg Neurol* 61:479-82, 2004.

Cohen-Gadol AA, Krauss WE, Spinner RJ. Delayed central nervous system superficial siderosis following brachial plexus avulsion injury. *Neurosurg Focus* 16: Article 10, 2004.

Collignon FP, Cohen-Gadol AA, Krauss, WE. Circumferential decompression of the foramen magnum for the treatment of syringomyelia associated with basilar invagination. *Neurosurg Rev* 27:168-72, 2004.

Cohen-Gadol AA, White JB, Lynch JJ, Miller GM, Krauss WE. Synovial cysts of the thoracic spine. *J Neurosurg-Spine* 1:52-57, 2004.

Cohen-Gadol AA, Ozduman K, Bronen RA, Kim JH, Spencer DD. Long-term outcome after epilepsy surgery for focal cortical dysplasia. *J Neurosurg* 101:55-65, 2004.

Schäuble B, Cascino GD, Pollock BE, Gorman DA, Weigand S, Cohen-Gadol AA, McClelland RL. Seizure outcomes after stereotactic radiosurgery for cerebral arteriovenous malformations. *Neurology* 63:683-687, 2004.

Cohen-Gadol AA, Spencer DD. Harvey W. Cushing and cerebrovascular surgery: Part II: Vascular malformations. *J Neurosurg* 101:553-559, 2004.

Cohen-Gadol AA, Spencer DD. Harvey W. Cushing and cerebrovascular surgery: Part I: Aneurysms. *J Neurosurg* 101:547-552, 2004.

Cohen-Gadol AA, DiLuna ML, Piepmeier J, Spencer DD. Non-enhancing de novo glioblastomas: report of two cases. *Neurosurg Rev* 27:281-285, 2004.

Cohen-Gadol AA, Pan JW, Kim JH, Spencer DD, Hetherington HH. Mesial temporal lobe epilepsy: a proton magnetic resonance spectroscopy study and a histopathologic analysis. *J Neurosurg* 101:613-620, 2004.

Cohen-Gadol AA, Westerveld M, Alvarez-Carilles J, Stoddard KR, Spencer DD. Intracarotid amygdala memory and hippocampal MRI volumetry: validity of the Wada test as an indicator of hippocampal integrity among the candidates for epilepsy surgery. *J Neurosurg* 101:926-31, 2004.

Cohen-Gadol AA, Spencer, DD. Epilepsy surgery in 2005. *Neurosurgery Quarterly* 14:198-203, 2004.

Cohen-Gadol AA, Spencer DD. The development of techniques for resection of spinal cord tumors by Harvey W. Cushing. *J Neurosurg-Spine* 2: 92-97, 2005.

Cohen-Gadol AA, Piepgras DG, Krishnamurthy S, Fessler RD. Residency work-hours reform: the results of a national survey of the program directors and residents in neurosurgery training programs. *Neurosurgery* 56:398-403, 2005.

Cohen-Gadol AA, Atkinson P, Krauss WE. CNS superficial siderosis following spinal surgery: case report. *J Neurosurg-Spine* 2:206-208, 2005.

Cohen-Gadol AA, Homan MJ, Laws ER, Atkinson JDL, Miller R. The Mayo brothers and Harvey Cushing: a review of their personal letters through their 39-year friendship. *J Neurosurg* 102:391-396, 2005.

Pan JW, Kim JH, Cohen-Gadol AA, Pan C, Spencer DD, Hetherington HP. Regional energetic dysfunction in hippocampal epilepsy. *Acta Neurol Scand* 111:218-24, 2005.

Voorhees JR, Cohen-Gadol AA, Laws ER, Spencer DD. Battling blood loss in neurosurgery: Harvey Cushing's embrace of electrosurgery. *J Neurosurg* 102:745-752, 2005.

Cohen-Gadol AA, Voorhees JR, Laws ER, Spencer DD. Battling blood loss in neurosurgery: Harvey Cushing's embrace of electrosurgery. Editorial response letter [Comment] *J Neurosurg* 102: 599-600, 2005.

Voorhees JR, Cohen-Gadol AA, Spencer DD. The early evolution of neurological surgery: conquering increased intracranial pressure, infection, and blood loss. *Neurosurg Focus* 18:(4)e2, 2005.

Jacob JT, Cohen-Gadol AA, Maher CO, Meyer FB. Transorbital penetrating brain stem injury in a child: case report. *J Neurosurg-Peds*: 102:350-352, 2005.

Krauss WE, Edwards DA, Cohen-Gadol AA. Transthoracic discectomy without interbody fusion. *Surg Neurol* 63:403-8, 2005.

Cohen-Gadol AA, Nahed BV, Voorhees JR, Spencer DD. Cushing's experience with the surgical treatment of spinal dysraphism. *J Neurosurg-Peds* 102:441-444, 2005.

Cohen-Gadol AA, Bradley CC, Williamson A, Kim JH, Westerveld M, Duckrow BB, Spencer DD. Normal magnetic resonance imaging and medial temporal lobe epilepsy: the clinical syndrome of paradoxical temporal lobe epilepsy. *J Neurosurg* 102:902-909, 2005.

Spencer, DD, Cohen-Gadol AA. Normal magnetic resonance imaging and medial temporal lobe epilepsy: the clinical syndrome of paradoxical temporal lobe epilepsy. Editorial response letter [Comment] *J Neurosurg* (in press).

Cohen-Gadol AA, Laws ER, Spencer DD. The evolution of Harvey Cushing's surgical approach to pituitary tumors from transsphenoidal to transfrontal. *J Neurosurg* 103:372-377, 2005.

Maramattom BV, Cohen-Gadol AA, Wijdicks EFM, Kallmes D. Segmental cutaneous hemangioma and spinal arteriovenous malformation (Cobb Syndrome): A case report and historical perspective. *J Neurosurg-Spine* 3:249-252, 2005.

Cohen-Gadol AA, Liu JK, Laws ER. Cushing's first case of transsphenoidal surgery: the launch of pituitary surgery era. *J Neurosurg* 103: 570-574, 2005.

Jacob JT, Cohen-Gadol AA, Scheithauer BW, Krauss WE. Intramedullary spinal cord gangliocytoma: case report and a review of the literature. *Neurosurg Rev* 28:326-329, 2005.

Liu JK, Cohen-Gadol AA, Laws ER Jr, Cole CD, Kan P, Couldwell WT. Harvey Cushing and Oscar Hirsch: Early forefathers of modern transsphenoidal surgery. *J Neurosurg* 103:1096-1104, 2005.

Cohen-Gadol AA, Jacob JT, Edwards DA, Krauss WE. Coexistence of intracranial and spinal cavernous malformations: a study of prevalence and natural history. *J Neurosurg* 104:376-381, 2006.

Cohen-Gadol AA, Wilhelmi BG, Collignon F, White JB, Britton JW, Cambier DM, Christianson TJH, Marsh WR, Meyer FB, Cascino GD. Long-term outcome of epilepsy surgery among 399 patients with non-lesional seizure foci including mesial temporal lobe sclerosis. *J Neurosurg* 104:513-524, 2006.

Cohen-Gadol AA, Mokri B, Piepgras DG, Meyer FB, Atkinson JL. Surgical anatomy of dural defects in spontaneous spinal cerebrospinal fluid leaks. *Neurosurgery* 58: 238-245, 2006.

Kumar N, Cohen-Gadol AA, Wright A, Miller GM, Ahlskog JE. Superficial siderosis. *Neurology* 66:1144-1152, 2006.

Cohen-Gadol AA, Pollock BE. Radiosurgery for arteriovenous malformations in children. *J Neurosurg* 104:388-391, 2006.

Collignon F, Wetjen NM, Cohen-Gadol AA, Cascino GD, Parisi J, Meyer FB, Marsh WR, Roche P, Weigand SD. Altered expression of connexin subtypes in mesial temporal lobe epilepsy in humans. *J Neurosurg* 105:77-87, 2006.

Clarke MJ, Cohen-Gadol AA, Ebersold MJ, Cabanela ME. Long-term incidence of subaxial cervical spine instability following cervical arthrodesis surgery in patients with rheumatoid arthritis. *Surg Neurol* 66:136-40, 2006.

Maher CO, Cohen-Gadol AA, Raffel C. Pediatric neurosurgery. *Prog Neurol Surg* 19:97-106, 2006.

Tubbs RS, Loukas M, Shoja MM, Cohen-Gadol AA, Wellons JC 3rd, Oakes WJ. Roots of neuroanatomy, neurology, and neurosurgery as found in the Bible and Talmud. *Neurosurgery*. 63(1):156-62; discussion 162-3, 2008.

Tubbs RS, Parmar A, Noordeh N, Rogers C, Rogers N, Loukas M, Shoja MM, Cohen-Gadol AA, Ital J. Surgical anatomy of the radial nerve and profunda brachii artery within the triangular interval. *Anat Embryol*. Jul-Sep;113(3):129-34, 2008.

Van Gompel JJ, Stead SM, Giannini C, Meyer FB, Marsh WR, Fountain E, So E, Cohen-Gadol AA, Lee KH, Worrell GA. Phase I trial: safety and feasibility of intracranial electroencephalography using hybrid subdural electrodes containing macro- and microelectrode arrays. *Neurosurg Focus*. Sep;25(3):E23, 2008.

Tubbs RS, Loukas M, Shoja MM, Shokouhi G, Wellons JC, Oakes WJ, Cohen-Gadol AA. The contralateral long thoracic nerve as a donor for upper brachial plexus neurotization procedures: A cadaveric feasibility study. *J Neurosurg*. Sep 26, 2008.

Shelton BA, O'Hara E, Tubbs RS, Shoja MM, Barker FG, Cohen-Gadol AA. Emergency suboccipital decompression for respiratory arrest during supratentorial surgery: the untold story of a surgeon's courage in times of despair. *J Neurosurg*. Oct. 31, 2008.

Voorhees JR, Tubbs RS, Nahed B, Cohen-Gadol AA. William S. Halsted and Harvey W. Cushing: reflections on their complex association. *J Neurosurg*. Oct 31, 2008.

Akard W. Tubbs RS, Seymour ZA, Hitselberger WE, Cohen-Gadol AA. Evolution of techniques for the resection of vestibular schwannomas: from saving life to saving function. *J Neurosurg*. Nov. 7, 2008.

Cohen-Gadol AA. Acute ventriculoperitoneal shunt malfunction following opening of the spinal subarachnoid space. *Childs Nerv Syst* Jan 29, 2009.

Tubbs RS, El-Zammer D, Rogers ME, Kelly DR, Lott R, Chua GD, Shoja MM, Loukas M, Oakes WJ, Cohen-Gadol AA. The existence of hypoglossal root ganglion cells in adult humans: potential clinical implications. *Surg Radiol Anat*. Mar., 31(3): 173-176, 2009.

Shoja MM, Tubbs RS, Loukas M, Khalili M, Alakbarli F, Cohen-Gadol AA. Vasovagal synope in the Canon of Avicenna: The first mention of carotid artery hypersensitivity. *Int J Cardiol*. Mar 28, 2009 (Epub ahead of print).

Wahl CJ, Tubbs RS, Spencer DD, Cohen-Gadol AA. Harvey Cushing as a book collector, bibliophile, and archivist: the precedence for the genesis of the Brain Tumor Registry. *J Neurosurg*. April 3, 2009 (Epub ahead of print).

Cohen-Gadol AA, Geryk B, Binder DK, Tubbs RS. Conquering the third ventricular chamber. *J Neurosurg*. April 10, 2009 (Epub ahead of print).

Tubbs RS, Miller J, Loukas M, Shoja MM, Shokouhi G, Cohen-Gadol AA. Surgical and anatomical landmarks for the perineal branch of the posterior femoral cutaneous nerve: implications in perineal pain syndromes. *J Neurosurg*. April 10, 2009 (Epub ahead of print).

Tubbs RS, Loukas M, Hill M, Shoja MM, Cohen-Gadol AA. Richard Lower (1631-1691): acknowledging his notable contributions to the exploration of the nervous system. *J Neurosurg*. April 10, 2009 (Epub ahead of print).

Tubbs RS, Loukas M, Shoja MM, Cohen-Gadol AA. Emergency transorbital ventricular puncture: refinement of external landmarks. *J Neurosurg*. April 17, 2009 (Epub ahead of print).

Tubbs RS, Apadin N, Uz A, Sullivan A, Loukas M, Shoja MM, Cohen-Gadol AA. Anatomy of the lateral intermuscular septum of the arm and its relationships to the radial nerve and its proximal branches. *J Neurosurg* April 17, 2009 (Epub ahead of print).

Tubbs RS, Loukas M, Shoja MM, Wellons JC, Cohen-Gadol AA. Feasibility of ventricular expansion postmortem: a novel laboratory model for neurosurgical training that simulates intraventricular endoscopic surgery. *J Neurosurg*. April 24, 2009 (Epub ahead of print).

Tubbs RS, Shoja MM, Loukas M, Oakes WJ, Cohen-Gadol AA. William Henry Battle and Battle's sign: mastoid ecchymosis as an indicator of basilar skull fracture. *J Neurosurg*. April 24, 2009 (Epub ahead of print).

Cohen-Gadol AA, Friedman JA, Friedman JD, Tubbs RS, Munis JR, Meyer FB. Neurosurgical management of intracranial lesions in the pregnant patient: a 36-year institutional experience and review of literature. *J Neurosurg*. May 1, 2009 (Epub ahead of print).

Tubbs RS, Groat C, Loukas M, Shoja MM, Ardalan MR, Cohen-Gadol AA. Pierre Dionis (1643-1718): surgeon and anatomist. *Singapore Med J*. 2009 April;50(4):447-449.

Presentations

Junna, M. R., R. D. Buechler, A. A. Cohen-Gadol, and G. D. Cascino. Prognostic Importance of Risk Factors for Temporal Lobe Epilepsy in Patients Undergoing Surgical Treatment. Presented at the American Epilepsy Society meeting, December 2007.

Cohen-Gadol, Aaron. Some of Harvey Cushing's Contributions to Posterior Fossa Neurosurgery. Presented at UCLA Neurosurgery Ground Rounds, August 2005.

Liu, J. K., D. Abeloff, A. A. Cohen-Gadol, R. W. Crosby, G. P. Lees, and W. T. Couldwell. Max Brödel: His art, legacy, and contributions to neurosurgery through medical illustration Presented to the American Association of Neurological Surgeons, New Orleans, 2005.

Cohen-Gadol, Aaron. Perforating arteries of the proximal anterior cerebral circulation: surgical anatomy and clinical implications. Presented at Mayo Clinic Neurosurgery Department Ground Rounds, October 8, 2004.

Cohen-Gadol, A. A., D. G. Piepgras, S. Krishnamurthy, and R. D. Fessler. Resident duty-hours reform: The results of a national survey of the program directors and residents in neurosurgery training programs. Presented to the Congress of Neurological Surgeons, San Francisco, 2004.