

VIKAS Y. RAO, MD, FAANS

BRAIN, SPINE, AND CEREBROVASCULAR SURGEON
ORANGE COUNTY NEUROSURGICAL ASSOCIATES

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Curriculum Vitae

CURRENT PRACTICE

Orange County Neurosurgical Associates – Mission Viejo, CA

Aug 2016 – Present

Board Certified Neurosurgeon

- . Practice specializing in Cerebrovascular, Endovascular, and Cranial Neurosurgery
- . Practice includes Neurotrauma, Neurocritical Care, and Spine surgery
- . Admitting privileges at Providence Mission Hospital, MemorialCare Saddleback Medical Center, MemorialCare Orange Coast Medical Center and Hoag Hospital Newport Beach

HOSPITAL LEADERSHIP POSITIONS

Providence Mission Hospital – Mission Viejo, CA

- . Co-Director of Cerebrovascular Neurosurgery since 2018
- . Director of Surgical Neuro-oncology since 2021
- . Director of Neurosurgical Trauma program and co-chair Mission Hospital Neuro-Trauma Committee since 2018
- . Providence Southern California Neuroscience Advisory Council Representative since 2019
- . Active Member of Providence Neuroscience Institute Regional Research Committee, Neurotrauma Committee, Stroke Committee, and Neurovascular Committee

Memorial Care Saddleback Medical Center – Laguna Hills, CA

- . Medical Director of Stroke and Neuro-interventional Program since 2019
 - . Joint Commission Certified Thrombectomy-Capable Stroke Center

MEDICAL LICENSURE AND CERTIFICATIONS

Diplomate of the American Board of Neurological Surgery, 2021

Primary Examination Complete in 2012, Oral Exam completed in 2021

California Medical Board – Lic. # A141786 – Exp. 11/30/21

California Fluoroscopy Permit – Lic # RHC 00202393 – Exp. 10/31/2022

US Medical Licensing Examination – Steps 1 (2006), 2 (2008), 3 (2009)

Previous Licenses:

New Jersey State Board of Medical Examiners – Lic. # 25MA09678900 – Expired 2017

Pennsylvania State Board of Medicine – Lic. # MD455270 – Expired 2016

Texas Medical Board – Physician in Training Permit # BP10030513 – Expired 2015

EDUCATION

- Drexel Neuroscience Institute / Global Neuroscience Institute – Philadelphia, PA *July 2015 – June 2016*
Fellow in Endovascular, Cerebrovascular Neurosurgery and Neurocritical Care
- Baylor College of Medicine / MD Anderson Cancer Center – Houston, TX *June 2008 – June 2015*
Resident in Neurosurgery
 . Chief Resident 2014-2015
- DeBakey Department of Surgery – Baylor College of Medicine – Houston, TX *June 2008 – June 2009*
Intern in General Surgery
- Keck School of Medicine – University of Southern California – Los Angeles, CA *Aug 2004 – May 2008*
Doctor of Medicine, May 2008
 . Keck School of Medicine Dean’s Scholarship for Years 3 and 4, 2008
 . Carolyn L. Kuckein Alpha Omega Alpha Student Research Fellowship, 2006
 . American Academy of Neurology Medical Student Research Scholarship, 2006
 . Keck School of Medicine Medical Student Research Fellowship, 2006
- University of California – Berkeley, CA *Aug 1997 – Dec 2001*
Bachelor of Arts - College of Letters and Sciences, Double Major
 . Molecular & Cell Biology - Neurobiology, Honors with Thesis
 . Departmental Honors Thesis: Hormone Induced Functional Changes in Cultured Glia, 2001
 . Psychology, Highest Honors with Thesis
 . Departmental Honors Thesis: Construction of Berkeley’s Auditory fMRI System, 2001
 . Distinction in General Scholarship – UC Berkeley equivalent to cum laude, 2001
 . Dean’s List, 2001

RESEARCH EXPERIENCE

- MIND Trial – Artemis in the Removal of Intracerebral Hemorrhage *Jan 2020 – Current*
Site Principal Investigator
 Sponsor: Penumbra, Inc.
 Project: Site PI at Mission Hospital for randomized clinical trial of a minimally invasive removal of intracranial hemorrhages vs. best medical management. Mission Hospital was the first site enrolling for this trial in California.
- Smirnakis Lab, Baylor College of Medicine *Nov 2011 – July 2013*
Post-doctoral Research Fellow during Neurosurgery Residency
 Principal Investigator: Stelios M. Smirnakis, M.D., Ph. D.
 Project: BOLD MRI to study cerebral perfusion as a tool for evaluation of cerebrovascular reserve in stroke patients
- EVEREST Cortical Stimulator Clinical Trial – Northstar Neuroscience *Dec 2005 – Dec 2007*
Research Associate, fMRI
 Site PI at USC: Mark Liker, MD and Carolee Winstein, Ph. D., PT, FAPTA
 Supervised USC’s fMRI neuroimaging component of Northstar Neuroscience’s Clinical Trial for their Renova™ implanted cortical stimulator to aid in recovery of motor function after stroke.
- Laboratory of Motor Behavior and Neurorehab., University of Southern Calif. *July 2005 – May 2007*
Research Assistant

Principal Investigator: Carolee Winstein, Ph. D., PT, FAPTA

Project: Analyzed fMRI data study looking at changes in activation patterns after constraint induced movement therapy in patients that have previously suffered strokes looking for neural correlates of recovery.

Clinical Neuroscience Lab, UCLA

Nov 2003 – July 2004

Principal Investigator: Tyrone Cannon, Ph. D.

Project: Analyzed data from fMRI studies of schizophrenic patient. Determined methods of functional and structural data merging to better understand the contribution of structural pathology to functional deficits in a patient population.

Helen Wills Neuroscience Institute, UC Berkeley

July 2001 – July 2003

Principal Investigators: Mark D'Esposito, M.D. and Robert Knight, M.D.

Project: Researched pre-frontal cortex function using fMRI, specifically looking at the interaction between PFC activation and suppression of reflexive behavior or the enhancement of memory recall.

Center for Research and Education on Aging, Lawrence Berkeley National Lab

Jan 2000 – Dec 2001

Principal Investigator: Paola Timiras, M.D., Ph. D.

Researched the protective effect that hormone treatment can have on aging cultured CNS cells in guarding against glutamate cytotoxicity using cell culture and enzyme assays.

PEER REVIEWED PUBLICATIONS

1. Beck, T.L., Momose, H., Dym, J., **Rao, V.Y.**, Bohart, R., Goldstein, B.H. Cranial and intra-axial metastasis originating from a primary ovarian Dysgerminoma. *Gynecol Oncol Rep.* 29:55-57 (2019)
2. Ghali, M.G.Z., Srinivasan, V.M., **Rao, V.Y.**, Omeis, I. Idiopathic spinal cord herniation. *Journal of Clinical Neuroscience.* 51:1-5. May (2018)
3. Mokin, M., Sonig, A., Sivakanthan, S., Ren, Z., Elijovich, L., Arthur, A., Goyal, N., Kan, P., Duckworth, E., Veznedaroglu, E., Binning, M. **Rao, V.**, Turner, R., Turk, A., Baxter, B., Daubs, G., Linfante, I., Snyder, K., Levy, E., Siddiqui, A. Clinical and Procedural Predictors of Outcomes from the Endovascular Treatment of Posterior Circulation Strokes. *Stroke* 47(3):782-8. Mar (2016)
4. Patel, A.J., Suki, D., Hatiboglu, M.A., **Rao, V.Y.**, Fox, B.D., Sawaya, R. Impact of surgical methodology on the complication rate and functional outcome of patients with a single brain metastasis. *Journal of Neurosurgery.* 112:1132-1143 (2015)
5. Vedantam, A., **Rao, V.Y.**, Shaltoni, H.M., Mawad, M.E. Incidence and Clinical Implications of Carotid Branch Occlusion Following the treatment of Internal Carotid Artery Aneurysms with the Pipeline Embolization Device. *Neurosurgery.* 76(2). Feb (2015)
6. Effendi, S.T., **Rao, V.Y.**, Momin, E.N., Cruz-Navarro, J., Duckworth, E.A. The 1-piece Transbasal approach: operative technique and anatomical study. *Journal of Neurosurgery.* 121(6) 1446-52. Dec (2014)
7. Duckworth, E.A., **Rao, V.Y.**, Patel, A. J. Double Barrel Bypass for Cerebral Ischemia: Technique, Rationale, and Preliminary Experience With 10 Consecutive Cases. *Neurosurgery*; 73(1 Suppl Operative). Sep (2013)
8. **Rao, V.Y.**, Shah K. B., Bollo R. J., Mawad, M. E., Whitehead, W. E., Curry, D. J., Dauser, R. C., Luerssen, T. G., Jea, A. Management of ruptured dissecting intracranial aneurysms in infants: report of four cases and review of the literature. *Child's Nervous System.* 29(4). April (2013)
9. **Rao, V.Y.**, Hwang, S.W., Adesina, A.M., Jea, A. Thrombosed traumatic aneurysm of the occipital artery: a case report and review of the literature. *Journal of Medical Case Reports.* 16(1), Jul (2012)
10. Patel, A. J., **Rao, V.Y.**, Fox, B.D., Suki, D., Wildrick, D., Sawaya, R., DeMonte, F. Radiation-Induced Osteosarcomas of the Calavaria and Skull Base. *Cancer.* 117(10), May (2011)
11. Fridley, J., Adams, G., **Rao, V.** Patel, A., Humphries, W., Gopinath, S., Small Cell Lung Cancer Metastasis in the Pituitary Gland presenting with Seizures and Headache. *Journal of Clinical Neuroscience.* 18(3), March (2011)
12. Patel, A. J., Adams, G., Humphries, W. E., **Rao, V.Y.**, Fox, B.D., Fridley, J., Gopinath, S.P. Multiple Myeloma

- Presenting as Solitary Mass in the Posterior Fossa: A Case Report. *Journal of Clinical Neuroscience*. 17(11), Nov (2010)
13. Liker, M.A., Won D. S., **Rao, V.Y.** & Hua, S. E. Deep Brain Stimulation: An Evolving Technology. *Proceedings of the IEEE*. 96(7) July (2008)
 14. van Erp, T. G., Lesh, T. A., Knowlton, B. J., Bearden, C. E., Hardt, M., Karlsgodt, K. H., Shirinyan, D., **Rao, V.**, Green, M. F., Subotnik, K. L., Nuechterlein, K, Cannon, T.D. Remember and Know Judgments During Recognition in Chronic Schizophrenia. *Schizophrenia Research* 100(1-3), March (2008)
 15. Curtis, C.E., Cole M. W., **Rao, V.Y.** & D'Esposito, M. Cancelling Planned Action: An fMRI study of Countermanding Saccades. *Cerebral Cortex* 15(9), Sep (2005)
 16. Curtis, C. E., **Rao, V. Y.**, & D'Esposito, M. Maintenance of Spatial and Motor Codes During Oculomotor Delayed Response Tasks. *Journal of Neuroscience* 24 (16), Apr (2004)

CONFERENCE PRESENTATIONS AND PUBLISHED ABSTRACTS

1. Vedantam, A., **Rao, V.Y.**, Shaltoni, H., Mawad, M.E. Incidence and Clinical Implications of Major Branch Occlusion Following Placement of Flow Diverters within the Supraclinoidal Internal Carotid Artery. *Presented at the CNS Meeting, San Francisco* (2014)
2. Effendi, S.E. **Rao, V.Y.**, Momin, E. Duckworth, E. A. The One Piece Transbasal Approach: Operative Technique and Anatomical Study. *Presented at the AANS Meeting, San Francisco* (2014)
3. **Rao, V.Y.**, Shaltoni, H. Mawad, M.E. Comparison of Flow Diversion and Stent Assisted Coiling for the Endovascular Treatment of Paraclinoid Aneurysms. *Presented at the AANS/CNS Cerebrovascular Section Meeting, Honolulu* (2013)
4. Duckworth, E.A., **Rao, V.Y.**, Patel, A. J. Double Barrel Bypass for Cerebral Ischemia and Moyamoya: Proof of Concept, Rationale, and Initial Experience. *Presented at the AANS/CNS Cerebrovascular Section Meeting, Honolulu* (2013)
5. **Rao, V.Y.**, Bollo R. J., Whitehead, W. E., Curry, D. J., Dauser, R. C., Luerssen, T. G., Jea, A. Management of ruptured dissecting intracranial aneurysms in infants: Report of 4 cases and Review of the Literature. *Presented at the AANS/CNS Pediatric Neurosurgery Section Meeting, St. Louis* (2012)
6. **Rao, V.Y.**, Fox, B.A., Duckworth, E.A. "Double-Barrel" STA-MCA Bypass for Cerebral Ischemia. *Presented at the AANS Meeting, Miami* (2012)
7. Mayer, R.R., **Rao, V.Y.**, Tatsui, C.E., Ehni, B.L. Transpedicular Decompression for Lumbar Foraminal Stenosis. *Presented at the AANS Meeting, Miami* (2012)
8. **Rao, V.Y.**, Fahim, D.K., Duckworth, E.A. Indocyanine Green Videoangiography for Selection of Recipient Vessels in EC-IC Bypass Surgery. *Presented at the AANS/CNS Cerebrovascular Section Meeting, New Orleans* (2012)
9. **Rao, V.Y.**, Thomas, J.G., Suarez, J.I., Duckworth, E.A. Outcomes after Early Decompressive Hemicraniectomy for Ischemic Stroke in Elderly. *Presented at the AANS/CNS Cerebrovascular Section Meeting, Los Angeles* (2011)
10. Patel, A.J., **Rao, V.Y.**, Fox, B.D., Suki, D., Sawaya, R., DeMonte, F. Radiation Induced Osteosarcomas of the Calvarium and Skull Base. *Presented at the World Federation of Neurosurgical Societies, Boston* (2008)
11. Winstein, C.J., Garrison, K., **Rao, V. Y.**, Dong, Y., Cen, S., Dobkin, B. The Effects of Rehabilitative Therapy After Stroke on Cortical Motor Activity : An fMRI Study. *Presented at Society for Neuroscience, San Diego.* (2007)
12. Curtis, C. E., **Rao, V. Y.**, Sun, F. T., Miller, L. M., & D'Esposito, M. Coherence between fMRI time series distinguishes two networks in the maintenance of visuomotor and visuospatial memoranda during spatial oculomotor delayed response tasks. *Presented at the Cognitive Neuroscience Society, New York City.* (2003)
13. Curtis, C. E., Cole, M. W., **Rao, V. Y.**, Ollinger, J. M., & D'Esposito, M. Canceling planned action: an fMRI study of countermanding saccades. *Presented at Society for Neuroscience, New Orleans.* (2003)

BOOK CHAPTERS

1. **Rao.V.Y.**, Binning M., Felbaum, R., Veznedaroglu, E. Midbasilar Artery Aneurysms. In: Rangel-Castilla L (eds) *Decision Making in Neurovascular Disease* (2018)
2. Liebman K.M., **Rao V.Y.**, Eckardt G.W. Arteriovenous Malformations: How We Changed Our Practice –Discussion. In: Veznedaroglu E. (eds) *Controversies in Vascular Neurosurgery*. Springer (2016)

TEACHING EXPERIENCE

<i>Instructor</i> – AANS/SNIS/SVIN Fellows Course – Memphis, TN	<i>Sept 2015</i>
<i>Instructor</i> – Society of Neurological Surgeons Boot Camp – Houston, TX	<i>Aug 2011, Aug 2013</i>
<i>Neuroanatomy Teaching Assistant</i> – Keck School of Medicine – Los Angeles, CA	<i>March – May 2008</i>
<i>Organic Chemistry Teaching Assistant</i> – UC Berkeley – Berkeley, CA	<i>Aug 2000 – May 2001</i>

VOLUNTEER EXPERIENCE

NAZ Foundation – New Delhi, India	<i>Feb – April 2002</i>
Mother Teresa’s Home for the Dying and Destitute – Delhi, India	<i>Feb – April 2002</i>