

MICHAEL T. LAWTON, M.D.

BIOGRAPHY

Michael T. Lawton, MD is the President and Chief Executive Officer of [Barrow Neurological Institute](#), as well as its chairman of the Department of Neurological Surgery and the Robert F. Spetzler Endowed Chair in Neurosciences. Additionally, he is the chief of vascular and skull base neurosurgery at Barrow, and he specializes in the surgical treatment of aneurysms, [arteriovenous malformations](#), arteriovenous fistulas, [cavernous malformations](#), and cerebral revascularization, including carotid endarterectomy. As the leader of the largest cerebrovascular center in the country, he has experience in surgically treating more than 4,800 [brain aneurysms](#) and over 900 AVMs. He also practices skull base tumor surgery and the endovascular treatment of aneurysms.

Dr. Lawton co-directs and conducts his research at the Barrow Aneurysm and AVM Research Center (BAARC), a collaborative research group funded by grants from the National Institutes of Health that investigates the physiology of cerebral circulation and the pathophysiology of vascular malformations. His basic science investigations study the formation, underlying genetics, and rupture of brain AFVMs, as well as the hemodynamics, rupture, and computational modeling of brain aneurysms. His clinical investigations study the anatomy of microsurgical approaches to vascular lesions and the outcomes of aneurysm, AVM, and bypass surgery. He is the principle investigator of a NIH U54 grant and program director of the Brain Vascular Malformation Consortium (BVMC), a multicenter group studying malformations associated with Hereditary Hemorrhagic Telangiectasia, cavernous malformations, and Sturge Weber Syndrome.

He has published over 600 peer-reviewed articles, over 90 book chapters, and 6 textbooks, including *Seven AVMs: Tenets and Techniques for Resection*, *Seven Bypasses: Tenets and Techniques for Revascularization*, and *Seven Aneurysms: Tenets and Techniques for Clipping*, which has won numerous awards and sold more copies than Yasargil's *Microneurosurgery*. Dr. Lawton's awards include the Young Neurosurgeon Award from the World Federation of Neurological Societies, the Harold Rosegay Teaching Award, the Diane Ralston Clinical and Basic Science Teaching Award, and an Impact Award as Exceptional Innovator from the Greater Phoenix Chamber (2019). He has given over 800 invited lectures nationally and internationally, including visiting professorships at over 50 neurosurgical institutions. He has been active in resident teaching, directing the CNS Anatomy Course for Senior Residents, co-directing the AANS Vascular Skills Course, and directing industry-sponsored anatomy courses. He sponsors an observership in vascular neurosurgery that has hosted more the 100 neurosurgeons and residents nationally and internationally. He co-founded Mission: BRAIN, a teaching mission to raise the level of neurosurgery practiced in developing countries, and has conducted 8 missions in Mexico, the Philippines, and Peru.

CURRICULUM VITAE

December 2019

CURRICULUM VITAE

NAME: Michael T. Lawton, M.D.

POSITION:

7/2017 – Present President & Chief Executive Officer, Barrow Neurological Institute
Professor & Chairman, Department of Neurological Surgery
Chief, Vascular & Skull Base Neurosurgery
Chairman & President, Barrow Brain and Spine
Robert F. Spetzler Endowed Neuroscience Chair

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<https://www.barrowneuro.org/get-to-know-barrow/person/michael-lawton-md/>
<https://www.barrowbrainandspine.com/>

EDUCATION:

1978 – 1982	New Trier High School Winnetka, Illinois		High School Diploma (with Honors)
1982 - 1986	Brown University Providence, Rhode Island		Sc.B., Engineering (with Honors)
1986 - 1990	The Johns Hopkins University School of Medicine, Baltimore, Maryland		M.D.
1990 - 1991	The Johns Hopkins University Baltimore, Maryland (John Cameron, Chairman)	Intern	General Surgery
1991 - 1997	Barrow Neurological Institute Phoenix, Arizona (Robert F. Spetzler, Chairman)	Resident	Neurological Surgery
1995 - 1996	Barrow Neurological Institute Phoenix, Arizona (Robert F. Spetzler, Chairman)	Fellow	Cerebrovascular & Skull Base Surgery
2008 – 2011	University of California San Francisco, CA (Van V. Halbach, Director)	Fellow	Endovascular Surgery
2014	Harvard University School of Public Health Boston, MA		Leadership Development Physicians in Academic Health Centers

PRINCIPAL POSITIONS HELD:

1994 - 2000	Arizona State University Tempe, Arizona	Adjunct Professor of Biomedical Engineering
1997 - 2003	University of California, Medical School San Francisco, CA	Assistant Professor of Neurosurgery Chief, Vascular and Skull Base Surgery
2003 - 2007	University of California, Medical School San Francisco, CA	Associate Professor of Neurosurgery Chief, Vascular and Skull Base Surgery
2007 – 6/2017	University of California, Medical School San Francisco, CA	Professor of Neurosurgery Chief, Vascular and Skull Base Surgery
2001 – 6/2017	University of California, Medical School San Francisco, CA	Tong Po Kan Endowed Chair in Neurosurgery
2009 – 6/2017	University of California, Medical School	Vice-Chairman, Department of Neurosurgery

	San Francisco, CA	
2013 – 6/2017	University of California, Medical School San Francisco, CA	Professor of Anesthesiology & Perioperative Care
2016 – 6/2017	University of California, Medical School San Francisco, CA	Acting Chairman, Department of Neurosurgery
2017 – Present	University of California, Medical School San Francisco, CA	Adjunct Professor of Neurosurgery
2017 – Present	Barrow Neurological Institute	President & Chief Executive Officer
2017 – Present	Barrow Neurological Institute	Professor & Chairman of Neurosurgery Chief, Vascular and Skull Base Surgery
2017 – Present	Barrow Neurological Institute	<i>Robert F. Spetzler</i> Endowed Neuroscience Chair
2017 – Present	Barrow Brain and Spine	Chairman & President
2017 – Present	University of Arizona, College of Medicine Phoenix, AZ	Professor of Neurosurgery
2018 – Present	University of Arizona, College of Medicine Phoenix, AZ	Chairman of Neurosurgery at BNI
2017 – Present	Arizona State University Tempe, AZ	Professor, School of Biological and Health Systems Engineering
2018 – Present	Barrow Neurological Institute	Director, BNI-ASU Initiative for Innovation in Neuro-Engineering

LICENSES, CERTIFICATION:

2001 – Present	American Board of Neurological Surgery (#21085)
1997 – Present	Medical licensure, California (#A62104)
1995 – Present	Medical licensure, Arizona (#23468)
1992	Basic Life Support Certification
1992	Advanced Cardiac Life Support Certification
1990	Advanced Trauma Life Support Certification
1995 - 1996	Instructor, Advanced Trauma Life Support

HONORS AND AWARDS:

1982	Academic Achievement Award	New Trier High School
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1984 - 1986	Meiklejohn Society	Brown University
1986	Honors in Engineering	Brown University
1986	Sigma Xi	National Scientific Research Honor Society
1996	Resident Research Award	Rocky Mountain Neurosurgical Society
1997	Resident Research Award	Rocky Mountain Neurosurgical Society
1997	Young Neurosurgeon Award	World Federation of Neurosurgical Societies and International Congress of Neurological Surgery
2005	Harold Rosegay Teaching Award	University of California, San Francisco Department of Neurological Surgery
2006	Diane D. Ralston Clinical and Basic Science Teaching Award	University of California, San Francisco Department of Neurological Surgery
2007 – Present	Top Doctor	Castle Connolly and American Registry Boca Raton, FL
2007 – Present	Best Doctors in America	Best Doctors, Aiken, SC
2009 – Present	America’s Top Surgeons	Consumers’ Research Council of America Washington, DC
2010 – Present	Guide to America’s Top Surgeons	SLD Industries, Simi Valley, CA
2011 – Present	Top Doctor	415 Top Doctors, San Francisco, CA San Francisco Magazine Marin Magazine
2011	Award of Merit “Seven Aneurysms: Tenets and Techniques for Clipping”	Association of Medical Illustrators
2011	Patients’ Choice Award	American Registry, Delray Beach, FL
2012	Super Doctors	Super Doctors, Minneapolis, MN
2012	Ben Franklin Award “Seven Aneurysms: Tenets and Techniques for Clipping”	Finalist, Professional/Technical
2013	Hunt-Wilson Lecture	American Assoc. of Neurological Surgeons
2014 – Present	Top Doctor	Castle Connolly Medical, New York, NY

2015	PROSE Award “Seven AVMs: Tenets and Techniques for Resection”	Honorable Mention, Textbook in Medicine
2015	Getch Fellowship Award (Brian Walcott)	Congress of Neurological Surgeons
2017	William L. Young Achievement Award	The Aneurysm and AVM Foundation
2017	University of California Distinguished Service Award	University of California, San Francisco
2018	Health Care Power List	Phoenix Magazine
2019	Exceptional Innovator, Impact Award	Greater Phoenix Chamber of Commerce

KEYWORDS/AREAS OF INTEREST:

Clinical Interests

Intracranial aneurysms; arteriovenous malformations; cavernous malformations; dural arteriovenous fistulae; atherosclerotic disease; cerebral ischemia and stroke; spinal cord vascular malformations; skull base surgical approaches; microsurgical techniques; revascularization and bypass surgery.

Research Interests

Clinical outcomes after microsurgery for cerebrovascular diseases; pathogenesis of dural arteriovenous fistulas and arteriovenous malformations; angiogenesis, inflammation, and hemodynamics affecting aneurysm and AVM rupture; genetics of brain vascular malformations; radiation arteriopathy in arteriovenous malformations; aneurysmal subarachnoid hemorrhage and vasospasm; microsurgical anatomy of skull base surgical approaches.

PROFESSIONAL ACTIVITIES:

Clinical

Director, Barrow Vascular Neurosurgery Service

I have directed this clinical service for 2.5 years, which includes the inpatient service, neurosurgical operations, and the outpatient clinic.

Attending Neurosurgeon, Barrow Department of Neurological Surgery

I have attended in the department for 2.5 years. I supervise residents, fellows, and medical students during their various clinical activities.

Research

Founder and Director, Barrow Aneurysm & AVM Research Center (BAARC)

Co-Principal Investigator, Brain Vascular Malformations Consortium (BVMC)

Co-Director, Barrow Innovation Center

Co-Director, Barrow Neuroanatomy and Skull Base Surgery Laboratory

Summary of Clinical Activities

As Director of the Vascular Neurosurgery Program, I care for patients with aneurysms, arteriovenous malformations, dural arteriovenous fistulas, cavernous malformations, stroke/cerebral ischemia, atherosclerotic disease, and various vascular pathologies in the spine and spinal cord. I

perform a wide spectrum of microsurgical techniques, including aneurysm clippings, resection of vascular malformations, bypass procedures, carotid endarterectomies, and skull base tumor resections. As benchmarks of my clinical activity, I treated over 200 aneurysms in the calendar year 2018. My annual case volume is approximately 400 operations, making my practice one of the most active services in the country. My personal series of aneurysms treated is over 4700, and my personal series of AVMs resected is nearly 900.

My approach to patients with cerebrovascular disease is a multidisciplinary one, and I work closely with Neurovascular Neurology through personal collaboration, multidisciplinary conferences, and clinical research. I completed a fellowship in endovascular surgery at UCSF to give me a balanced therapeutic perspective.

PROFESSIONAL ORGANIZATIONS

Memberships

1997 – Present	American Association of Neurological Surgeons
1997 – Present	Congress of Neurological Surgeons
1997 – Present	Section on Cerebrovascular Surgery of the AANS and CNS
1997 – 2017	San Francisco Neurological Society
1997 – 2017	Bay Area Stroke Society
2002 – Present	Western Neurosurgical Society
2003 – Present	American Academy of Neurological Surgeons
2013 – Present	World Academy of Neurological Surgeons
2014 – Present	Society of Neurological Surgeons

Service to Professional Organizations

2003 – 2009	Editorial Board, Neurosurgery
2009 – 2014	Associate Editor, Neurosurgery
2014 – Present	Editor, Vascular Section, Neurosurgery
2006 – Present	Editorial Board, Neurosurgical Review
2003 – 2010	Editor, Stroke Rounds
1999 – 2000	Guest Editor, Operative Techniques in Neurosurgery
2013 – Present	Editorial Board, Cureus
2012 – Present	Associate Editor, Surgical Videos, Operative Neurosurgery
1993 - 1997	Ad Hoc Reviewer, The Western Journal of Medicine
1993 - 1997	Ad Hoc Reviewer, Mayo Clinic Proceedings
1993 - 2003	Ad Hoc Reviewer, Neurosurgery
1993 - Present	Ad Hoc Reviewer, Surgical Neurology
1993 - Present	Ad Hoc Reviewer, Neurological Research
1993 - Present	Ad Hoc Reviewer, Acta Neurochirurgica

1993 - Present	Ad Hoc Reviewer, Stroke
1999 - Present	Ad Hoc Reviewer, American Journal of Neuroradiology
2001 - Present	Ad Hoc Reviewer, Journal of Neurosurgery
2001 - Present	Ad Hoc Reviewer, Skull Base: An Interdisciplinary Approach
2003 - Present	Ad Hoc Reviewer, Clinical Neurology and Neurosurgery
2004 - Present	Ad Hoc Reviewer, Neurosurgical Focus
2011 - Present	Ad Hoc Reviewer, World Neurosurgery
1999 – 2004	AANS/CNS Cerebrovascular Section Abstract Review Committee
1999 – 2003	American Association of Neurological Surgeons Publications Committee
1999 – 2002	Congress of Neurological Surgeons Scientific Program Committee
1999	Congress of Neurological Surgeons Annual Meeting Committee, Registration Chair
2000 – 2005	AANS/CNS Cerebrovascular Section Technology Review Panel
2000 – 2005	AANS/CNS Cerebrovascular Section Co-Chair of Microsurgery
2000	Society of Cardiovascular and Interventional Radiology (SCIVR), American Society of Interventional and Therapeutic Neuroradiology (ASITN), AANS/CNS Section on Cerebrovascular Surgery Joint Writing Group for Brain Arteriovenous Malformations
2001 – 2002	Congress of Neurological Surgeons Chairman, Special Courses Director, Special Courses
2002 – 2004	AANS/CNS Cerebrovascular Section Executive Council, Ex-Officio Member
2003 – 2006	American Association of Neurological Surgeons Web Site Committee, Cerebrovascular Section
2004	Congress of Neurological Surgeons Local Arrangements Chairman, Annual Meeting
2007	Cerebrovascular Complications Conference Meeting Chairman
2007 – 2010	American Academy of Neurological Surgeons Scientific Program Committee
2010	Western Neurosurgical Society Scientific Program Committee
2010	Congress of Neurological Surgeons Practical Courses
2010	American Academy of Neurological Surgeons Chairman, Scientific Program Committee
2011 – Present	CNS 3-D Surgical Anatomy Course for Senior Residents Course Director
2011 – Present	Congress of Neurological Surgeons

	Practical Courses
2011 – Present	Resident Training and Education, Stryker Course Director
2012 – 2015	Scientific Program Committee American Association of Neurological Surgeons
2012 – Present	AANS Vascular Techniques Course for Residents. Memphis, TN Course Co-Director
2013 – Present	UCSF Stroke and Aneurysm Update Course Director
2014 – 2015	American Academy of Neurological Surgeons Vice President
2015, 2018	American Board of Neurological Surgery Guest Examiner
2015 – 2016	American Academy of Neurological Surgeons Member at Large
2015 – Present	Brain Aneurysm Foundation, Board of Directors
2018 – 2020	President, International Conference of Cerebrovascular Surgery
2018 – 2019	Vice President, AANS/CNS Joint Cerebrovascular Section

INVITED PRESENTATIONS

International

1997	Rocky Mountain Neurosurgical Society Annual Meeting. Jasper Park Lodge, Canada
2001	American Association of Neurological Surgeons, Annual Meeting. Toronto, Ontario, Canada
2003	Winter Neurosurgical Conference. Bugaboos, British Columbia, Canada
2003	Japanese/American Joint Symposium, American Association of Neurological Surgeons, Annual Meeting. San Diego, CA
2004	First International Symposium on Selected Topics in Cerebral Vascular Diseases. Leon, Guanajuato, Mexico
2005	The 34 th Annual Meeting of Japanese Society on Surgery for Cerebral Stroke. Morioka, Japan
2006	2 nd International Conference on Intracranial Atherosclerosis. San Francisco, CA
2006	Conference of Asian Academic Neurosurgeons, Shanghai, China
2006	8 th International Conference on Cerebrovascular Surgery. Taipei, Taiwan
2007	7 th Annual International Congress on Cerebral Revascularization. St. Louis, MO, USA
2007	International Stroke Conference. San Francisco, CA
2007	Japanese Congress of Neurological Surgeons. Sendai, Japan
2008	1 st World Congress on Cerebral Revascularization. St. Louis, MO
2008	27 th Brazilian Congress of Neurosurgery, Iguassu Falls, Brazil
2009	2 nd World Congress on Cerebral Revascularization. St. Louis, MO
2009	XIV World Congress of Neurological Surgery. Boston, MA
2010	Korean Neurosurgical Society, 50 th Annual Meeting. Seoul, South Korea
2010	Chilean Congress of Neurological Surgery, 53 rd Annual Meeting. Coquimbo, Chile
2011	International Stroke Conference. Los Angeles, CA
2011	World Federation of Neurosurgical Societies Educational Course. Phuket, Thailand

- 2011 Association of Southeast Asian Nations Congress of Neurological Surgery. Phuket, Thailand
- 2011 Neurosurgical Approaches to Cerebral Aneurysms. Valencia, Spain
- 2011 International Project of Community Neurosurgery. Universidad de Guadalajara, Mexico
- 2012 International Project of Community Neurosurgery. Universidad de Guadalajara, Mexico
- 2012 Congress of the Society of Neurological Surgery of the West. Puerto Vallarta, Mexico
- 2012 Brazilian Congress of Neurosurgery. Rio de Janeiro, Brazil
- 2012 1st World AVM Congress. Edinburgh, Scotland
- 2012 European Society of Neuroradiology Annual Meeting. Edinburgh, Scotland
- 2012 Neurosurgical Society of Australasia Annual Scientific Meeting. Gold Coast, Australia
- 2012 Doctoral Dissertation Opposition, University of Helsinki. Helsinki, Finland
- 2013 Japanese Society of Surgery for Cerebral Stroke, 42nd Annual Meeting. Tokyo, Japan
- 2013 Mexican Congress of Neurological Surgeons Annual Meeting. Ixtapa, Mexico
- 2014 Academy of Filipino Neurosurgeons. Manila, Philippines
- 2014 German Society of Neurological Surgeons. Dresden, Germany
- 2014 Visiting Professor, Laval University. Quebec, Canada
- 2014 2nd World AVM Congress. Nancy, France
- 2014 18th Congress of the Society of Neurological Surgery of the West. Puerto Vallarta, Mexico
- 2014 Brazilian Congress of Neurosurgery, 30th Annual Meeting. Curitiba, Brazil
- 2014 7th Jornadas de Patologia Neurovascular, SENECA Barcelona. Barcelona, Spain
- 2015 Japanese Society of Neuroradiology, 44th Annual Meeting. Nagoya, Japan
- 2015 Congreso Nacional Neurocirugia, Sociedad Espanola de Neurocirugia (SENECA). Pamplona, Spain
- 2015 Helsinki Live Surgery Course. Helsinki, Finland
- 2015 European Society of Neuroradiology Annual Meeting. Naples, Italy
- 2015 German Academy and German Society of Neurological Surgery. Heidelberg, Germany
- 2015 European Association of Neurological Surgery Annual Meeting. Madrid, Spain
- 2015 Huashan-Tiantan Internal Conference on Microsurgery and Endovascular Therapy for Cerebrovascular Disease. Shanghai, China
- 2016 Helsinki Live Surgery Course. Helsinki, Finland
- 2016 Far East Neurosurgery Sapporo Live Microsurgery Course in Cerebrovascular and Skull Base Surgery. Sapporo, Japan
- 2016 International Congress of Neurosciences, Hospital Juarez de Mexico. Mexico City, Mexico
- 2016 3rd World AVM Congress. Napa, CA, USA
- 2016 7th Meeting of Young Neurosurgeons from State of Sao Paulo and 4th Brazilian Congress of Neurosurgical Approaches. Sao Paulo, Brazil
- 2017 Royal College of Neurological Surgeons of Thailand, Annual Meeting. Bangkok, Thailand
- 2017 35th Annual Spring Meeting of the Korean Neurosurgical Society. Seoul, South Korea
- 2017 Helsinki Live Surgery Course. Helsinki, Finland
- 2017 World Federation of Neurosurgical Societies, XVI World Congress of Neurosurgery. Istanbul, Turkey
- 2017 International Conference on Cerebrovascular Surgery. Nagoya, Japan
- 2018 Stroke 2018: 43rd Annual Meeting of the Japan Stroke Society, 47th Annual Meeting of the Japanese Society on Surgery for Cerebral Stroke, and 34th SPASM Symposium. Fukuoka, Japan
- 2018 27th European Stroke Conference. Athens, Greece
- 2018 Helsinki Live Surgery Course. Helsinki, Finland
- 2018 Mission: BRAIN – Philippines. Manila, Philippines
- 2018 7th Annual World Course in Advanced Brain Tumor Surgery. London, England
- 2018 World Academy of Neurological Surgery Meeting. Prague, Czech Republic
- 2018 International Conference on Cerebrovascular Surgery. Prague, Czech Republic
- 2018 Brazilian Congress of Neurological Surgeons. Porto Allegre, Brazil
- 2018 International Society for Minimally Invasive Neurosurgery Educational Meeting. Toronto, Canada
- 2018 4th World AVM Congress. Montreal, Canada

- 2018 Haushan International Neurological Conference. Shanghai, China
- 2019 Helsinki Live Surgery Course. Helsinki, Finland
- 2019 8th Annual World Course in Advanced Brain Tumor Surgery. London, England
- 2019 European Society for Minimally Invasive Neurological Therapy (ESMINT) & European Association of Neurological Surgeons. Nice, France
- 2019 Society of Italian Neurosurgery National Congress and American Academy of Neurological Surgery. Rome, Italy
- 2019 Congresso Brasileiro de Atualizacao em Neurocirurgia (CBAN). Rio de Janeiro, Brazil
- 2019 Visiting Professor, Charite Hospital. Berlin, Germany
- 2019 World Advisory Neurosurgical Group, Annual Summit. Shanghai, China
- 2019 5th Bellaria Neurovascular Conference, Bologna, Italy
- 2019 B. Ramamurthi Oration, Joint Meeting of the Asian Australian Congress of Neurological Surgeons, Neurological Society of India, and International Meningioma Society. Mumbai, India

National

- 1997 Skull Base Surgical Dissection Course, House Ear Institute. Los Angeles, CA
- 1998 Visiting Professor, UCSF-Fresno. Fresno, CA
- 1998 Visiting Professor, United States Naval Hospital. San Diego, CA
- 1998 San Diego Academies of Neurological Surgery and Otolaryngology. San Diego, CA
- 1998 AANS Professional Development Program - Advanced Brain Anatomy for Nurses. San Francisco, CA
- 1998 Clinical Neurosciences by the Bay: Neuroradiology, Neurosurgery, and Neurology Postgraduate Course. San Francisco, CA
- 1998 Congress of Neurological Surgeons, Annual Meeting. Seattle, WA
- 1999 AANS Professional Development Program - Advanced Brain Anatomy for Nurses. San Francisco, CA
- 1999 UCSF Cerebrovascular Symposium, 1st Annual Meeting. San Francisco, CA
- 1999 Congress of Neurological Surgeons Annual Meeting. Boston, MA
- 2000 AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology Annual Meeting. New Orleans, LA
- 2000 Annual Meeting of the North American Skull Base Society. Scottsdale, AZ
- 2000 American Association of Neurological Surgeons Annual Meeting. San Francisco, CA
- 2000 Neurovascular Update: The New Millenium. San Francisco, CA
- 2001 Congress of Neurological Surgeons Annual Meeting. San Antonio, TX
- 2001 AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology Annual Meeting. Big Island, HI
- 2001 San Francisco Neurological Society, Annual Meeting. Bodega Bay, CA
- 2001 Congress of Neurological Surgeons, Annual Meeting. San Diego, CA
- 2002 Visiting Professor, Northwestern University. Evanston, IL
- 2002 AANS/CNS Section on Cerebrovascular Surgery and The American Society of Interventional and Therapeutic Neuroradiology Annual Meeting. Dallas, TX
- 2002 Visiting Professor, Johns Hopkins University. Baltimore, MD
- 2002 American Association of Neurological Surgeons, Annual Meeting. Chicago, IL
- 2002 Visiting Professor, University of Texas – Southwestern Medical Center. Dallas, TX
- 2002 Acute Stroke Management Course. San Francisco, CA
- 2002 Congress of Neurological Surgeons, Annual Meeting. Philadelphia, PA
- 2003 AANS/CNS Section on Cerebrovascular Surgery and The American Society of Interventional and Therapeutic Neuroradiology Annual Meeting. Phoenix, AZ

- 2003 American Association of Neurological Surgeons, Annual Meeting. San Diego, CA
- 2003 Congress of Neurological Surgeons, Annual Meeting. Denver, CO
- 2004 AANS/CNS Cerebrovascular Section and The American Society of Interventional & Therapeutic Neuroradiology Annual Meeting. San Diego, CA
- 2004 American Association of Neurological Surgeons Annual Meeting. Orlando, FL
- 2004 Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA
- 2005 AANS/CNS Cerebrovascular Section and The American Society of Interventional & Therapeutic Neuroradiology Annual Meeting. New Orleans, LA
- 2005 American Association of Neurological Surgeons, Annual Meeting. New Orleans, LA
- 2005 San Francisco Neurological Society, 57th Annual Meeting. Carmel, CA
- 2005 Visiting Professor, Loma Linda University. Loma Linda, CA
- 2005 Anspach Skull Base Surgery Course. Palm Beach Gardens, FL
- 2005 Visiting Professor, New York University. New York, NY
- 2006 AANS/CNS Cerebrovascular Section and The American Society of Interventional & Therapeutic Neuroradiology Annual Meeting. Orlando, FL
- 2006 American Association of Neurological Surgeons, Annual Meeting. San Francisco, CA
- 2006 Innovations in Medical and Surgical Care Conference. Honolulu, HI
- 2006 John R. Green Visiting Lectureship in Neurological Surgery, Barrow Neurological Institute. Phoenix, AZ
- 2006 Congress of Neurological Surgeons Annual Meeting. Chicago, IL
- 2007 American Association of Neurological Surgeons, Annual Meeting. Washington, DC
- 2007 Visiting Professor, University of California, San Diego. San Diego, CA
- 2007 Congress of Neurological Surgeons Annual Meeting. San Diego, CA
- 2007 American Society of Anesthesiologists, Annual Meeting. San Francisco, CA.
- 2008 American Association of Neurological Surgeons, Annual Meeting. Chicago, IL
- 2008 Biology of Vascular Malformations of the Brain. Washington, D.C.
- 2008 Washington State Association of Neurological Surgeons Annual Meeting. Seattle, WA
- 2008 Society of University Neurosurgeons Annual Meeting. San Francisco, CA
- 2008 Congress of Neurological Surgeons Annual Meeting. Orlando, FL
- 2008 Visiting Professor, Allegheny General Hospital. Pittsburgh, PA
- 2009 American Association of Neurological Surgeons Annual Meeting. San Diego, CA
- 2009 Cerebral Revascularization in New York City. New York, NY
- 2009 Congress of Neurological Surgeons. New Orleans, LA
- 2009 Gainey Visiting Professor, Mayo Clinic. Rochester, MN
- 2009 Visiting Professor, North Shore University. Manhasset, NY
- 2010 University of Colorado/Stryker Resident Course. Denver, CO
- 2010 American Association of Neurological Surgeons, Annual Meeting. Philadelphia, PA
- 2010 Visiting Professor, Oregon Health Sciences University. Portland, Oregon
- 2010 Guest Lecturer, Midwest Neurosurgical Society. Iowa City, IA
- 2010 Visiting Professor, University of Chicago/North Shore University. Evanston, IL
- 2010 Matthew Wood Lecturer, Semmes Murphey Neurologic and Spine Institute. Memphis, TN
- 2010 Western Neurosurgical Society, Annual Meeting. Santa Fe, NM
- 2010 Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA
- 2010 Visiting Professor, The Johns Hopkins University and Hospital, Baltimore, MD
- 2011 Sally Harrington Goldwater Lectureship in Neurological Surgery, Barrow Neurological Institute, Phoenix, AZ
- 2011 Visiting Professor, University of Illinois, College of Medicine – Peoria. Peoria, IL
- 2011 Visiting Professor, Thomas Jefferson University. Philadelphia, PA
- 2011 Visiting Professor, Cornell University. New York, NY
- 2012 Visiting Professor, Stanford University. Palo Alto, CA
- 2012 Visiting Professor, University of North Carolina. Chapel Hill, NC

- 2012 Congress of Neurological Surgeons, Annual Meeting. Chicago, IL
- 2013 Hunt-Wilson Lecture, American Association of Neurological Surgeons, Annual Meeting. New Orleans, LA
- 2013 Visiting Professor, University of Wisconsin. Madison, WI
- 2013 Visiting Professor, Cedars-Sinai Hospital. Los Angeles, CA
- 2014 Visiting Professor, Rush University. Chicago, IL
- 2014 Visiting Professor, University of Michigan. Ann Arbor, MI
- 2015 Visiting Professor, Louisiana State University Health. New Orleans, LA
- 2015 Visiting Professor, Washington University, St. Louis, MO
- 2015 American Association of Neurological Surgeons, Washington, DC
- 2015 Visiting Professor, Johns Hopkins University. Baltimore, MD
- 2017 Visiting Professor, Georgetown University. Washington, DC
- 2017 Visiting Professor, State University of New York, Buffalo, NY
- 2018 Visiting Professor, University of Rochester, Rochester, NY
- 2019 William Henry Hudson, Lecturer, Southern Neurosurgical Society, Key Largo, FL
- 2019 Visiting Professor, New York University, New York, NY
- 2020 Visiting Professor, University of Texas – San Antonio, San Antonio, TX

CME COURSES ATTENDED

- 2019 American Association of Neurological Surgeons, Annual Meeting
Congress of Neurological Surgeons, Annual Meeting
AANS/CNS Joint Cerebrovascular Section Annual Meeting
American Academy of Neurological Surgeons, Annual Meeting
- 2018 American Association of Neurological Surgeons, Annual Meeting
Congress of Neurological Surgeons, Annual Meeting
AANS/CNS Joint Cerebrovascular Section Annual Meeting
American Academy of Neurological Surgeons, Annual Meeting
- 2017 American Association of Neurological Surgeons, Annual Meeting
Congress of Neurological Surgeons, Annual Meeting
AANS/CNS Joint Cerebrovascular Section Annual Meeting
American Academy of Neurological Surgeons, Annual Meeting
- 2016 American Association of Neurological Surgeons, Annual Meeting
Congress of Neurological Surgeons, Annual Meeting
AANS/CNS Joint Cerebrovascular Section Annual Meeting
American Academy of Neurological Surgeons, Annual Meeting
- 2015 American Association of Neurological Surgeons, Annual Meeting
Congress of Neurological Surgeons, Annual Meeting
AANS/CNS Joint Cerebrovascular Section Annual Meeting
American Academy of Neurological Surgeons, Annual Meeting

GOVERNMENT AND OTHER PROFESSIONAL SERVICE

American Association of Neurological Surgeons

1999 – 2003	Publications Committee
2003 – 2006	AANS Cerebrovascular Section Web Site Committee
2012 – 2015	Scientific Program Committee

Congress of Neurological Surgeons

1999	Annual Meeting Committee, Registration Chair
1999 - 2002	Scientific Program Committee
2001 - 2002	Chairman, Special Courses
2001 - 2002	Course Director, Special Courses
2004	Local Arrangements Chairman

AANS/CNS Cerebrovascular Section

1999, 2001, 2002, 2003	Abstract Review Committee
2002 – 2004	Executive Council, Ex-Officio Member
2000 – 2006	Technology Review Panel
2000 – 2006	Co-Chair of Microsurgery

Western Neurosurgical Society

2006 – 2007	Scientific Program Committee
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American Academy of Neurological Surgeons

2007 – 2010	Scientific Program Committee
2010	Scientific Program Chairman
2014 – 2015	Vice President

Cerebrovascular Complications Conference

2008	Conference Co-Director
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UNIVERSITY AND PUBLIC SERVICE

UNIVERSITY SERVICE

UCSF CAMPUS-WIDE

1999 - 2001	Representative, Research Evaluation and Allocation Committee
1999 - 2004	Representative, Graduate Medical Education Committee
1999 - 2005	Representative, Adult Critical Care Committee
2001	Representative, Discharge Planning Project
2004 - 2017	Cerebrovascular Executive Committee
2015 - 2017	UCSF Health Leadership Council
2015 - 2017	Representative, Clinical Chairs Committee

DEPARTMENTAL SERVICE

1999 - 2017 Representative, Neurosurgery Resident Education Committee
 2015 - 2017 Chairman, Diversity Committee

PUBLIC SERVICE

1997 – Present Aneurysm and AVM Patient Support Group
 2005 The Aneurysm and AVM Foundation, Founding Member
 2005 – Present The Aneurysm and AVM Foundation, Board Member
 2005 – Present The Aneurysm and AVM Foundation, Chairman of Website Committee
 2006 – Present The Aneurysm and AVM Foundation, Awareness Walk
 2007 – Present Charles Maddock Foundation, Medical Advisory Board Member
 2012 – Present Brain Aneurysm Foundation, Medical Advisory Board Member
 2015 – Present Lisa Colagrassi Foundation, Medical Advisory Board Member

SUMMARY OF SERVICE ACTIVITIES

I initiated a neurosurgical mission, Mission:BRAIN (Bridging Resources and Advancing International Neurosurgery), to teach neurosurgical techniques and share medical skills and supplies in Mexico. With Alfredo Quinones Hinojosa – a Johns Hopkins neurosurgeon, alumnus of the UCSF neurosurgical training program, and native of Mexico – I lead a team of neurosurgeons, fellows, residents, and nurses to Hospital Civil de Guadalajara, a huge public hospital that serves Mexico’s second largest city. We spend a week teaching the hospital’s neurosurgeons to perform the kinds of challenging brain surgeries that will elevate the level of care provided to patients with brain tumors and vascular diseases. The program started in 2010 and has continued annually since. Mission:BRAIN has completed over 10 missions to Mexico and Philippines General Hospital in Manila, Philippines.

TEACHING AND MENTORING

FORMAL SCHEDULED CLASSES FOR UCSF STUDENTS

	Lectures (per	Class Size year)	Hours (per year)
Medical Student Classes			
Introduction to Neurosurgery	1	30	3
Neurology 110	12	6	12
Neurosurgical Subinternship		10	100
Resident Education			
Clinical Neurosurgery		14	1400
Vascular Microsurgery Lab	3	14	6

Skull Base Surgery Lab	3	14	6
Multidisciplinary Cerebrovascular Conference	50	25	50
Vascular Anatomy Conference	12	14	12
Neurosurgery Case Conference/Grand Rounds	12	25	12
Resident Mentor Program	4	3	12

Total (Hours per year) 1500

RESIDENTS DIRECTLY SUPERVISED OR MENTORED

Date	Name	Position	Faculty Role	Current Position
1997-1998	Eldon Eichbaum	Resident	Attending	Neurosurgeon, Private Practice
1997-1998	Paul Matz	Resident	Attending	Neurosurgeon, Univ. Alabama
1997-1998	Andrew Metzger	Resident	Attending	Neurosurgeon, Private Practice
1997-1999	Aviva Abosch	Resident	Attending	Neurosurgeon, University Colorado
1997-1999	Dan Lieberman	Resident	Attending	Neurosurgeon, Private Practice
1997-2000	Praveen Mummaneni	Resident	Attending	Neurosurgeon, UCSF
1997-2000	Geoffrey Manley	Resident	Attending	Neurosurgeon, UCSF
1997-2000	Scott Wachhorst	Resident	Attending	Neurosurgeon, Private Practice
1997-2001	Matthew Smyth	Resident	Attending	Neurosurgeon, Washington Univ.
1997-2001	Sandeep Kunwar	Resident	Attending	Neurosurgeon, UCSF
1997-2002	Steven Ojemann	Resident	Attending	Neurosurgeon, Univ. Colorado
1997-2002	Philip Theodosopolous	Resident	Attending	Neurosurgeon, UCSF
1998-2003	Edward Vates	Resident	Attending	Neurosurgeon, Univ. Rochester
1998-2003	Jay Chun	Resident	Attending	Neurosurgeon, Private Practice
1999-2004	Cornelia von Koch	Resident	Attending	Neurosurgeon, Kaiser Redwood City
2000-2005	Alfredo Quinones-Hinojosa	Resident	Attending	Neurosurgeon, Johns Hopkins Univ.
2000-2005	Devin Binder	Resident	Attending	Neurosurgeon, UC Irvine
2001-2006	Rose Du	Resident	Attending	Neurosurgeon, Brigham & Womens
2001-2006	Marcus Ware	Resident	Attending	Neurosurgeon,

2002-2007	Kurtis Auguste	Resident	Attending	Tulane Univ. Neurosurgeon, UCSF
2002-2007	Jon Chi	Resident	Attending	Neurosurgeon, Brigham & Womens
2002-2007	Justin Smith	Resident	Attending	Neurosurgeon, Univ. Virginia,
2003-2008	Frank Acosta	Resident	Attending	Neurosurgeon, Cedars-Sinai
2003-2008	Daniel Lim	Resident	Attending	Neurosurgeon, UCSF
2003-2008	Rene Sanchez-Mejia	Resident	Attending	Neurosurgeon, Scripps Clinic
2004-2009	Nader Sanai	Resident	Attending	Neurosurgeon, BNI
2004-2009	James Waldron	Resident	Attending	Neurosurgeon, Private Practice
2004-2009	Daniel Lu	Resident	Attending	Neurosurgeon, UCLA
2005-2010	Vincent Wang	Resident	Attending	Neurosurgeon, Univ. Texas, Galveston
2005-2010	Isaac Yang	Resident	Attending	Neurosurgeon, UCLA
2005-2010	Eddie Chang	Resident	Attending	Neurosurgeon, UCSF
2006-2011	Michael Sughrue	Resident	Attending	Neurosurgeon, Univ. Oklahoma
2006-2011	R. Mark Richardson	Resident	Attending	Neurosurgeon, Univ. Pittsburgh
2007-2012	Brian Jian	Resident	Attending	Neurosurgeon, Kaiser Sacramento
2007-2012	Matthew Tate	Resident	Attending	Neurosurgeon, Northwestern Univ.
2007-2012	Orin Bloch	Resident	Attending	Neurosurgeon, Northwestern Univ.
2008-2013	Phiroz Tarapore	Resident	Attending	Neurosurgeon, UCSF
2008-2013	Michael Oh	Resident	Attending	Neurosurgeon, Private Practice
2008-2013	Matthew Potts	Resident	Attending	Neurosurgeon, Northwestern Univ.
2009-2014	Aaron Clark	Resident	Attending	Neurosurgeon, UCSF
2009-2014	Michael Ivan	Resident	Attending	Neurosurgeon, Univ. Miami
2010-2015	Jason Davies	Resident	Attending	Fellow, SUNY – Buffalo
2010-2015	Rajiv Saigal	Resident	Attending	Fellow, UCSD
2010-2015	Jason Cheng	Resident	Attending	Neurosurgeon,

Private Practice

FELLOWS DIRECTLY SUPERVISED OR MENTORED

<u>Date</u>	<u>Name</u>	<u>Position</u>	<u>Faculty Role</u>	<u>Current Position</u>
2011 – 2013	Ana Rodriguez Hernandez	Fellow	Attending	Attending, Val d'Hebron, Barcelona
2013 – 2014	Adib Abla	Fellow	Attending	Attending, University of Arkansas
2014 – 2015	Christopher Owen	Fellow	Attending	Attending, Kaiser Permanente, Irvine
2015 – 2016	Brian Walcott	Fellow	Attending	Attending, USC
2016 – 2017	Jan-Karl Burkhardt	Fellow	Attending	Attending, Baylor
2017 – 2018	Justin Mascitelli	Fellow	Attending	Attending, University of Texas, San Antonio
2018 – 2019	Fabio Frisoli	Fellow		
2019 – 2020	Visish Srinivasan	Fellow		

PREDOCTORAL STUDENTS SUPERVISED OR MENTORED

<u>Date</u>	<u>Name</u>	<u>Position</u>	<u>Faculty Role</u>	<u>Current Position</u>
1995-1997	Karim Mouneimne	Engineering Student Medical	PhD Advisor Solutions, France	Venture
1996-1997	Tim Becker	Engineering Student	PhD Advisor of	Professor Engineering, UMich
1995-1997	John Pemberton	Pre-Med Student	Research Advisor	Ophthalmology Resident
2000-2002	Amanda Anbar	Pre-Med Student Resident,	Research Advisor UCSF	Medicine
2002-2005	Campbell Stewart	Pre-Med Student School,	Research Advisor Univ. Vermont	Medical
2005-2012	Christine Arnold	Researcher	Research Advisor	Research Associate
2005-2010	Yiqian Zhu	Researcher	Research Advisor	Post-doctoral Fellow
2005-2006	Yung Kim	Pre-Med Student	Research Advisor	Medical School
2005	Diep Pham	Pre-Med Student	Research Advisor	Medical School
2005	Ernesto Bogarin	Pre-Med Student	Research Advisor	Medical School
2006-2007	Martin Rutkowski	Pre-Med Student	Research Advisor	Neurosurgery Resident

INTERNATIONAL OBSERVERS

Date	Name	Institution	Country
2011	Daikichi Oguri	Fujita Health University	Japan
2011	Ramon Torne	Vall d'Hebron University Hospital	Spain
2011	Ruben Rodriguez	Valencia University General Hospital	Spain
2011	Peter Barbenik	Schön Klinik Vogtareuth	Germany
2011	Luigi Lanterna	Ospedali Riuniti – Bergamo	Italy
2011-2012	Osmon Arikan Nacar	Ankara Numune Hospital	Turkey
2012	Fon-Yih Tsuang	National Taiwan University Hospital	Taiwan
2012	Ming Yuan Chang	National Taiwan University Hospital	Taiwan
2012	Javier Ordura Martinez	Valencia University General Hospital	Spain
2012	Eduardo Vieira	UNICISAL	Brazil
2012	Juan Vicente Darrisa	Valencia University General Hospital	Spain
2012	Fuat Arikan Abello	Vall d'Hebron University Hospital	Spain
2012	Giovanni Pancucci	Hospital Universitari i Politècnic La Fe. Valencia	Spain
2012	Karolin Ohanoglu	Cumhuriyet University School of Medicine	Turkey
2012	Hugo Andrade	Central Hospital, Barquisimeto	Venezuela
2012	Hayan Dayoub		Syria
2012	Takao Yanagawa	Shinshu University	Japan
2012	Rebecca Perez Alfayate	Complejo Hospitalario Universitario	Canary Islands
2012	Dorothee Wachter	Georg-August-University Gottingen	Germany
2012	Rosario Sarabia	Hospital Universitario, Valladolid	Spain
2012	Lei Mao		China
2012	Remedios Lopez Serrano	Hospital Universitario Getafe	Spain
2012	Osman A Nacar	Ankara Numune Education and Research Hospital	Turkey
2012	Eduardo Vieira		Spain
2013	Ramon Torne Torne	University Hospital Vall d'Hebron	Spain
2013	Alejandro Carrasco	Cruces University Hospital Bilbao	Spain
2013	Jose Enrique Kleemann	Hospital Civil de Guadalajara Neurocirugia	Mexico
2013	Michael O'Sullivan	Cork University Hospital	Ireland
2013	Akitsugu Kawashima	Tokyo Women's Medical University	Japan
2013	Leonardo Giaromini	UNICAMP	Brazil
2013	Dhiego Bastos	UNICAMP	Brazil
2013	Ki Hun Kwon		China
2013	Victor Hugo Escobar e la Garma		Mexico
2013	Felipe Padilla Vazquez		Mexico
2013	Cameron McDougall		Canada
2013	Yusam Won	Kangbuk Samsung Hospital	South Korea
2013	Yuxiang Dai	Nanjing University Medical Center	China
2014	Bin Li	Xinhua Hospital Shanghai	China
2014	Vicente V Garza	VANL	
2014	Sailike Duishanbai	First Teaching Hospital of Xiugiang Medical University, Qrumqi	China
2014	Ana Maria Castano Leon	Hospital '12Octubre' Madrid	Spain
2014	Hong Jun Jeon	Yonsei University	South Korea

2014	Julio Plata Bello	Hospital Universitario de Canarias, Universidad de la Laguna	Canary Islands
2014	Bing Liu	Tianjin Medical University General Hospital	China
2014	Carlos Asoncio	Hospital Santa Crou and Sint Pav	
2014	Ehab Eissa	Cairo University	Egypt
2014	Mohamed Ali	Cairo University	Egypt
2014	Nadia Lorite Diaz	Dr Josep Trueta Hospita	Spain
2014	Jone Iglesias Bermejillo	Hospital Universitario Cruces	Spain
2014	Yi Guo	Affiliated Hospital of Hebei University	China
2014	Liang Wang	Tianjin First Center Hospital	China
2014	Xuequan Feng	Tianjin First Center Hospital	China
2014	Mario Teo	Institute of Neurological Science	Glasgow, UK
2014	Eduardo Seoane	Hospital Ramos Mejia Buenos Aires	Argentina
2014	Jian Hong	Tianjin Huan Hu Hospital	China
2014	Yu-Jan Lu	Chang Gung Memorial Hospital	Taiwan
2014	Eva Pay Valverde	Clinic University Navarra	Spain
2014	Ali Tayebi	Tehran University of Medical Sciences	Iran
2014	Olivares Blanco Magdalena	Hospital Universitario Virgen del Rocio, Sevilla	Spain
2014	Goji Fushihara	Saitama Medical University International Medical Center	Japan
2014	Nicola Montemurro	Universita di Firenze	Italy
2014	Hua Li	Nanjing University	China
2014	Alireza Sadighi	University of Wisconsin-Madison	USA
2015	Feres Chaddad	Federal University of Sao Paulo	Brazil
2015	Roberto Rodriguez Rubio	Hospital Civil de Guadalajara	Mexico
2015	Jose Luis SanMillan-Blasco	Hospital Universitari de Bellvitge	Spain
2015	Anna Lo Piesti	Hospital Unversitario Fundacion Jimenez Diaz	Spain
2015	Jae Seung Bang	Seoul National University	South Korea
2015	Fabian Romero Ch	H. Vall d'Hebron	Spain
2015	Isabel Cuervo Arango	Hospital Universitario Central de Asnrias	Spain
2015	Ma Yuan	Chengdu General Military Hospital	China
2015	Andrea Cardia	Instituto Clinico Humanitas	Italy
2015	Wonki Yoon	St Paul Hospital, Catholic University	South Korea
2015	Ilya Senko	Research Institute of Emergency Medicine	Russia
2015	Szu-Kai Hsu	Cathay General Hospital	Taiwan
2015	Isaac Jair Palacias Ortiz	Instituto Nacional de Neurologia y Neurocirugia	Mexico
2015	Jaime Lopez Calle	Hospital Nacional Arzobispo Loayza	Peru
2015	Francisco Alberto_Manaara	Hospital Juan Fernandez	Argentina
2015	Karanarak Urasyanandana	Phramongkutklao Hospital	Thailand
2015	Orlando Tortolero Barron	Instituto Mexiccino Die Seguro Social, Hospital "La Raza"	Mexico
2015	Blazej Nowak	Medical University of Warsaw	Poland

2015	Josue Avecillas	Hospital Clinicao San Carlos	Spain
2015	Tamoya Kamide	Kanazawa University	Japan
2015	Xinmin Ding	Shanxi People's Province Hospital	China
2015	Johnni Oswaldo Zamponi	Hospital Universitario Evangelico de Curitiba (HUEC)	Brazil
2015	Filippo Aquila	Osperdale Cisanello, Pisa	Italy

INFORMAL TEACHING

1997 – Present

- Intraoperative neurosurgical instruction
- Daily neurosurgical service rounds
- Daily neuroradiology and angiography rounds
- Participation in weekly neurosurgical conferences and grand rounds
- Multidisciplinary cerebrovascular conferences
- Cerebrovascular research laboratory meetings
- Clinical research, writing, and manuscript preparation

FACULTY MENTORING

Dates	Name	Position While Mentored	Mentoring Role	Current Position
2002-Present	Philip Theodosopolous	Asst Professor	Advisor	Asst Prof., Univ. Cincinnati
2003-Present	Edward Vates	Asst Professor	Advisor	Asst Prof., Univ. Rochester
2005-Present	Alfredo Quinones	Asst Professor	Advisor	Asst Prof., Johns Hopkins Univ.
1997-Present	Claiborne Johnston	Asst Professor	Research Collaborator	Asst Prof, UCSF
1999-Present	Nerissa Ko	Asst Professor	Research Collaborator	Asst Prof, UCSF
1999-Present	Vinneeta Singh	Asst Professor	Research Collaborator	Asst Prof, UCSF
2000-Present	Guo-Yuan Yang	Asst Professor	Research Collaborator	Asst Prof, UCSF
2000-Present	Jonathon Zaroff	Asst Professor	Research Collaborator	Asst Prof, UCSF
2005-Present	Howard Riina	Professor	Advisor	Professor, NYU

TEACHING AIDS

I developed the Program for Proficiency in Microsurgery, a laboratory course for the development of microsurgical skills. Residents are provided the opportunity to learn and practice techniques for vascular anastomosis, suturing together arteries and veins in rats using operating microscopes.

I developed the Neuroanatomy and Skull Base Surgery dissection program, a laboratory course to practice surgical approaches on cadaver heads. Each senior resident is given a cadaver head to learn skull base anatomy, complex surgical approaches, and microdissection techniques.

I contributed to the neurosciences/neurosurgical lecture series for the residents, which is part of their preparation for written and oral examination by the American Board of Neurological Surgery.

TEACHING AWARDS

- 2005 Harold Rosegay Teaching Award, Department of Neurological Surgery, University of California – San Francisco
- 2006 Diane D. Ralston Clinical & Basic Neuroscience Teaching Award, Department of Neurological Surgery, University of California – San Francisco
- 2017 Distinguished Service Award, Department of Neurological Surgery, University of California – San Francisco

SUMMARY OF TEACHING HOURS

2011-2012	Total hours of teaching and mentoring	1000
	Formal class or course teaching hours	150
	Informal teaching hours	500
	Mentoring hours	50
2010-2011	Total hours of teaching and mentoring	1000
	Formal class or course teaching hours	150
	Informal teaching hours	500
	Mentoring hours	50
2009-2010	Total hours of teaching and mentoring	1000
	Formal class or course teaching hours	150
	Informal teaching hours	500
	Mentoring hours	50

TEACHING NARRATIVE

My teaching includes the individual instruction of neurosurgery residents in all aspects of neurosurgery, from patient management in the ICU and wards, to the development of technical skills in the operating room, to diagnostic decision-making in the outpatient clinic. The residents rotate onto the Cerebrovascular service as junior residents during their PGY-3 year, from 3 to 6 months at a time. While on the service, they receive countless hours of supervision, instruction, mentoring, and teaching. The residents then rotate onto the Cerebrovascular service as senior and chief residents during their PGY-5 through PGY-7 years where I focus on developing microsurgical skills and knowledge of microsurgical neuroanatomy. These areas are stressed on my clinical service, in my lectures and didactic teaching, and in my laboratory. Residents who are not on my clinical service have the opportunity to practice the techniques they learn in the operating room, and to study the anatomy on cadaver heads in our teaching laboratory.

I also value writing as an academic tool and a vehicle for contributing to neurosurgery. Consequently, I spent many hours developing ideas, clinical research projects, manuscript drafts, and publications with the residents. This process teaches them the fundamentals of writing and publishing, which are critical to their academic success. I have published over 600 manuscripts, and they have almost all been with a resident or medical student. The process of writing manuscripts with residents teaches them clinical curiosity, fosters their creativity, and allows me to closely mentor individual residents with interest in vascular neurosurgery.

MENTORING NARRATIVE

I have been an active mentor to neurosurgical residents, medical students, college students, and practicing neurosurgeons. My operations, publications, books, and lectures have, over time, attracted the attention of those interested in the art and technical craft of vascular neurosurgery. I have opened my operating rooms to a steady stream of visitors and observers who learn by watching cases. My operating rooms are equipped with high-definition and 3-D video monitors for full immersion in the operative experience. My high clinical volume and high case complexity enables me to provide a significant learning experience to my observers, which include approximately 5 – 15 international observers per month and over 30 medical students per year. We have an international observership program for residents from other programs to come for 1 week or 1 year to observe special cases. We have a network to broadcast live surgery to sites within the hospital for expanded viewing/teaching. This observership program has enabled me to mentor many aspiring and established neurosurgeons. One of my missions is to encourage highly skilled technical neurosurgeons to develop their skills and pursue careers in this specialty, despite a shrinking case volume internationally.

RESEARCH AND CREATIVE ACTIVITIES

RESEARCH AWARDS AND GRANTS

CURRENT

- 2U54 NS065705-11 7/2019 – 6/2024
NIH/ National Institute of Neurological Disorders and Stroke \$4,500
“Brain Vascular Malformation Consortium: Predictors of Clinical Course”
Purpose: The **overall goal** of the BVMC is to facilitate and advance high-quality clinical research in CCM, SWS, and HHT by providing research infrastructure and maintaining longitudinal patient registries and biorepositories (**Aim 1**), by identifying and validating clinical outcomes and biomarkers for use in clinical trials (**Aim 2**), and by training the next generation of rare disease researchers and funding high-risk/high-payoff pilot studies (**Aim 3**).
Role: Co-Principal Investigator. (PI: Kim, H)
- 5 R01 NS034949-09 7/2008 – Present
NIH/ National Institute of Neurological Disorders and Stroke \$259,919
“Predictors of spontaneous cerebral AVM hemorrhage”
A project to develop novel risk stratification biomarkers and provide a decision-analysis framework for their use in the optimal management of brain arteriovenous malformation patients.
Role: Co-Investigator (PI: Helen Kim)
- Robert F. Spetzler Neurosciences Chair 7/2017 – Present
Barrow Neurological Foundation \$250,000
Robb Stroke Center Grant \$46,500

PENDING

None

PAST

- U54 NS065705-06 9/2014 – 8/2019
NIH/ National Institute of Neurological Disorders and Stroke \$6,250,000
“Brain Vascular Malformation Consortium: Predictors of Clinical Course”
A multidisciplinary, inter-institutional consortium to study three rare brain vascular malformations: familial cavernous malformation, Sturge-Weber syndrome, and brain arteriovenous malformations in hereditary hemorrhagic telangiectasia.
Role: Principal Investigator, Program Director, Administrative Unit Leader
- U54 NS065705-01 7/2009 – 6/2014
NIH/ National Institute of Neurological Disorders and Stroke \$1,019,759

“Brain Vascular Malformation Consortium: Predictors of Clinical Course”

A multidisciplinary, inter-institutional consortium to study three rare brain vascular malformations: familial cavernous malformation, Sturge-Weber syndrome, and brain arteriovenous malformations in hereditary hemorrhagic telangiectasia.

Role: Principal Investigator, Program Director, Administrative Unit Leader

- K08 NS02220-01 9/2000 – 8/2006
NIH, National Institute of Neurological Disorders and Stroke \$565,872
“Radiation arteriopathy in a transgenic arteriovenous fistula model”
Role: Principle Investigator
- 404956-36457 7/2001 – 6/2017
Tong-Po Kan Endowed Chair in Neurological Surgery \$160,427/yr
“Innovations in Vascular Neurosurgery”
A research project to explore new surgical techniques based on the study of neuroanatomy and microsurgical techniques in cadaver specimens.
Role: Principal Investigator
- Neurological Surgery Department, University of California, San Francisco 9/1997 – 9/2000
Research Development Grant \$153,952
“Development of gene therapy for cerebral arteriovenous malformations”
Role: Principal Investigator (444956-64528)
- P01 NS044155 9/2005 8/2014
NIH, National Institute of Neurological Disorders and Stroke \$828,267
Program Project Grant: “Integrative study of brain vascular malformations”
Role: Co-Investigator (PI: William L. Young)
- 1 R01 NS37921-05 9/2000 – 8/2014
NIH, National Institute of Neurological Disorders and Stroke
“Hemodynamic stress in brain vascular malformations”
Role: Co-Investigator (PI: William L. Young)
- 2 R01 NS27713-10 9/2000 – 8/2014
National Institute of Health, National Institute of Neurological Disorders and Stroke
“Hemodynamics of cerebral arteriovenous malformations”
Role: Co-Investigator (PI: William L. Young)
- 1 K24 NS02091-04 9/2000 – 8/2014
National Institute of Health, National Institute of Neurological Disorders and Stroke
“Integrative pathophysiology of cerebral AVMs”
Role: Co-Investigator (PI: William L. Young)
- 5 R01 NS41877-02 9/2000 – 8/2014
National Institute of Health, National Institute of Neurological Disorders and Stroke
“Upstream regulators of the prothrombotic state”
Role: Co-Investigator (PI: William L. Young)
- 5U01 NS42167 (444956-83295) 10/2004 – 10/2011

NIH, National Institute of Neurological Disorders and Stroke "Carotid Occlusion Surgery Study" Role: Co-Investigator	\$808,446
444956-83444 Center of Excellence Grant, Medtronic "Neurosurgical Education: Neuroanatomy and Skull Base Surgery" Role: Principle Investigator	3/2005 – 3/2007 \$50,336
1 K23 HL04054-01 National Institute of Health, National Heart, Lung, and Blood Institute "Cardiac dysfunction after subarachnoid hemorrhage" Role: Co-Investigator (PI: Jonathon Zaroff)	9/2002 – 8/2014
444956-44237 Cerebrovascular Research Fund "Innovations in aneurysm and vasospasm therapy" Role: Principal Investigator	9/1997 – 8/2002 \$34,990
444956-80869 Gauger Neuroanatomy and Skull Base Surgery Laboratory Fund "Neurosurgical Education: Neuroanatomy and Skull Base Surgery" Role: Principal Investigator	9/2003 – 8/2010 \$15,052
K08 NS42359-01 National Institutes of Health, National Institute of Neurological Disorders and Stroke "Natural history and treatment response of AVMs" Role: Co-Investigator (Alexander Halim, PI)	9/2004 – 1/2006
R01 NS38554 NIH, National Institute of Neurological Disorders and Stroke "Intraoperative Hypothermia for Aneurysm Surgery Trial II (IHAST)" Role: Co-Investigator (Michael M. Todd, PI; 444956-82019)	5/2001 – 5/2006 \$31,978
University of California, San Francisco "Shared Instrument Proposal" Role: Co-Investigator (Jeanette Hyer, PI; 522780-36323)	11/2005 – 10/2006 \$20,000
American Heart Association, Student Scholar Award in Cardiovascular Disease and Stroke "Nitric oxide synthase in radiation arteriopathy in a fistula model of arteriovenous malformations" Role: Faculty Preceptor (Junaid Malek, student)	5/2001 – 7/2001 \$2,000
Barrow Neurological Foundation Women's Board "Angiogenesis factor expression in dural arteriovenous fistulae formation" Principal Investigator	1/1995 – 7/1996 \$8,500
Barrow Neurological Foundation Women's Board "Development of copolymers for endovascular occlusion of high-grade AVMs" Principal Investigator	7/1995 – 7/1996 \$3,500

Arizona State University, Department of Chemical, Biomedical, and Materials Engineering, Grant in Aid “Treatment of arteriovenous malformations with endovascular copolymers” Faculty Sponsor	8/1996 – 12/1997 \$2,000
American Heart Association, Arizona Affiliate, Graduate Research Fellowship “Treatment of arteriovenous malformations with endovascular copolymers” Faculty Sponsor	8/1996 – 8/1997 \$5,000
American Heart Association, Arizona Affiliate, Affiliate Standard Grant “Treatment of arteriovenous malformations with endovascular copolymers” Co-Investigator	7/1997 – 6/1999 \$73,500
National Institute of Health, Medical Student Research Fellowship “Development of arteriovenous malformation models for testing endovascular copolymers.” Faculty Sponsor	6/1995 – 8/1995 \$1,000

PEER REVIEWED PUBLICATIONS:

1. North RB, Ewend MG, Lawton MT, Piantadosi S: Spinal cord stimulation for chronic, intractable pain: Superiority of multichannel devices. *Pain* 44 (2): 119-130, 1991.
2. North RB, Ewend MG, Lawton MT, Kidd DH, Piantadosi S: Failed back surgery syndrome: Five-year follow-up after spinal cord stimulator implantation. *Neurosurgery* 28 (5): 692-699, 1991.
3. Dugan JD, Lawton MT, Glaser B, Brem H: A new technique for explantation and in vitro cultivation of chicken embryos. *The Anatomical Record* 229 (1): 125-128, 1991.
4. Harbour JW, Lawton MT, Criscuolo GR, Holliday MJ, Mattox DE, Long DM: Clivus chordoma: A report of 12 recent cases and review of the literature. *Skull Base Surgery* 1 (4): 200-206, 1992.
5. Lawton MT, Shetter A, Shapiro W, Spetzler RF: Angiogenesis factors and their clinical applications. *BNI Quarterly* 9 (2): 46-54, 1993.
6. Lawton MT, Spetzler RF: Management strategies for giant intracranial aneurysms. *Contemporary Neurosurgery* 16(17): 1-6, 1994.
7. Lawton MT, Shetter AG, Shapiro W, Spetzler RF: Angiogenesis: A neurosurgical perspective. *Advances in Clinical Neurosciences* 4: 27-43, 1994.
8. Lawton MT, Golfinos JG, Harrington T, Sonntag VKH, Spetzler RF: Surgical management of intracranial arachnoid cysts. *BNI Quarterly* 11 (2): 14-18, 1995.
9. Lawton MT, Porter R, Heiserman JE, Jacobowitz R, Sonntag VKH, Dickman CA: Surgical management of spinal epidural hematomas: The relationship between surgical timing and neurological outcome. *Journal of Neurosurgery* 83 (1): 1-7, 1995.
10. Lawton MT, Hamilton MG, Spetzler RF: Multimodality treatment of deep arteriovenous malformations: Thalamus, basal ganglia, and brain stem. *Neurosurgery* 37 (1): 29-36, 1995.
11. Lawton MT, Spetzler RF: Rupture of a dermoid tumor. *BNI Quarterly* 11(3): 28-29, 1995.
12. Lawton MT, Hamilton MG, Beals SP, Joganic EF, Spetzler RF: Radical resection of anterior skull base and cavernous sinus lesions. Part I: Transfacial approaches (Honored Guest Lecture). *Clinical Neurosurgery* 42: 43-62, 1995.
13. Lawton MT, Hamilton MG, Beals SP, Joganic EF, Spetzler RF: Radical resection of anterior skull base and cavernous sinus lesions. Part II: Internal carotid artery sacrifice (Honored Guest Lecture). *Clinical Neurosurgery* 42: 63-70, 1995.
14. Lawton MT, Spetzler RF: Surgical management of giant intracranial aneurysms: Experience with 171 patients (Honored Guest Lecture). *Clinical Neurosurgery* 42: 245-266, 1995.
15. Lawton MT, Hamilton MG, Morcos JJ, Spetzler RF: Revascularization and aneurysm surgery: Current techniques, indications, and outcome. *Neurosurgery* 38 (1): 83-94, 1996.
16. Anson JA, Lawton MT, Spetzler RF: Characteristics and surgical treatment of dolichoectatic and fusiform aneurysms. *Journal of Neurosurgery* 84(2): 185-193, 1996.

17. Lawton MT, Spetzler RF: Internal carotid artery sacrifice for radical resection of skull base tumors. *Skull Base Surgery* 6 (2): 119-123, 1996.
18. Lawton MT, Dasgupta CP, Spetzler RF: Transpetrosal and combination approaches to skull base lesions. *Operative Techniques in Otolaryngology-Head and Neck Surgery* 7(2): 159-167, 1996.
19. Jones BD, Lawton MT, Holland MC, Spetzler RF: Radiation-induced intracranial malignant fibrous histiocytoma with a 37-year latency: Case report. *BNI Quarterly* 12 (1): 25-27, 1996.
20. Lawton MT, Spetzler RF: Massive retinal melanoma. *BNI Quarterly* 12 (1): 28, 1996.
21. Lawton MT, Ho JC, Bichard WD, Coons SW, Zabramski JM, Spetzler RF: Titanium aneurysm clips: Part I - Mechanical, radiological, and biocompatibility testing. *Neurosurgery* 38 (6): 1158-1164, 1996.
22. Fisher R, Ehsan T, Smith K, Lawton MT, Bichard W, Spetzler RF: Titanium aneurysm clips: Part II - Seizure and electroencephalographic studies in implanted rabbits. *Neurosurgery* 38 (6): 1165-1169, 1996.
23. Lawton MT, Heiserman JE, Prendergast VC, Zabramski JM, Spetzler RF: Titanium aneurysm clips: Part III - Clinical application in 16 patients with subarachnoid hemorrhage. *Neurosurgery* 38 (6): 1170-1175, 1996.
24. Kiris T, Sankhla SK, Lawton MT, Zabramski JM, Spetzler RF: Microsurgical anatomy of the cavernous sinus. *BNI Quarterly* 12 (2): 4-14, 1996.
25. Lawton MT, Golfinos JG, Spetzler RF: The contralateral transcallosal approach: Experience with 32 cases. *Neurosurgery* 39 (4): 729-735, 1996.
26. Lawton MT, Dasgupta CP, Spetzler RF: The orbitozygomatic-combined supra- and infratentorial approach: Technical note. *BNI Quarterly* 12 (3): 4-9, 1996.
27. Borden NM, Lawton MT, McDougall CW, Spetzler RF, Santmi J: Endovascular occlusion of a vertebral artery-venous fistula in a patient with neurofibromatosis. *BNI Quarterly* 12 (3): 22-23, 1996.
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PATENTS ISSUED OR PENDING (ALLOWED)

None

OTHER CREATIVE ACTIVITIES

The Aneurysm and AVM Foundation (TAAF)

Co-founder of a charitable nonprofit organization dedicated to bettering the lives, support networks, and medical care of those affected by aneurysms and other vascular malformations of the brain.

www.aneurysmfoundation.org

“Brain Emergency”

A documentary to raise public awareness about aneurysms, their surgical and endovascular treatments, and their effects on patients’ lives. Premiered at Letterman Auditorium, Lucas Films, San Francisco, CA (11-11-2008).

Mission: BRAIN (Bridging Resources to Advance International Neurosurgery)

Co-founded a teaching mission with Dr. Alfredo Quinones-Hinojosa to raise the level of neurosurgery practiced in developing countries, and conducted multiple missions in Mexico and the Philippines.

Lawton Extracranial-Intracranial Bypass Instruments

Mizuho Incorporated. A comprehensive set of microsurgical instruments designed for delicate bypass and arterial reconstructive procedures.

Lawton Deep Cavernous Malformation Instruments

Mizuho Incorporated. A comprehensive set of microsurgical instruments designed for removing cavernous malformations in the brainstem and other deep locations.

ABSTRACTS, COMMENTS, AND LETTERS:

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PRESENTATIONS AND ABSTRACTS

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114. Lawton MT: Intracranial aneurysms and stroke. Medical Education Program, Sierra Nevada Memorial Hospital. Grass Valley, CA, October 19, 1998.
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119. Lawton MT: Neurosurgical management of stroke and subarachnoid hemorrhage. Continuing Medical Education Program, Sequoia Hospital. Redwood City, CA, February 26, 1999.
120. Lawton MT: The posterior interhemispheric approach for cerebrovascular lesions. Neurosurgery at Jackson Hole. Teton Village, WY, March 14, 1999.
121. Lawton MT: The posterior interhemispheric approach for cerebrovascular lesions. Neurosurgical Society of America Meeting. Scottsdale, AZ, March 31, 1999.
122. Johnston SC, Wilson CB, Halbach VV, Higashida RH, Dowd CF, Lawton MT, McDermott MW, Applebury CB, Farley TL, Gress DR: Comparison of short-term outcomes of surgical clipping and

- endovascular coiling in the treatment of unruptured cerebral aneurysms. Annual Meeting of the American Association of Neurological Surgeons. New Orleans, LA, April 26, 1999.
123. Chun J, Wilson CB, Lawton MT: Management of anterior cranial fossa dural arteriovenous fistulas. Annual Meeting of the American Association of Neurological Surgeons. New Orleans, LA, April 28, 1999.
 124. Lawton MT: Neurosurgical management of stroke and subarachnoid hemorrhage. Continuing Medical Education Program, Alta Bates Medical Center – Ashby Campus. Berkeley, CA, May 11, 1999.
 125. Lawton MT: Neurovascular anatomy – Radiographic and surgical correlations. Neuroanatomy Course for Nurses. San Francisco, CA, May 23, 1999.
 126. Porter RW, Detwiler PW, Spetzler RF, Lawton MT, Baskin JJ, Derksen PT, Zabramski JM: Cavernous malformations of the brain stem: Experience with 100 patients. North American Skull Base Society Annual Meeting. Chicago, IL, May 28-31, 1999.
 127. Lawton MT: Cerebral revascularization: Current indications, operative techniques, and results. UCSF Cerebrovascular Symposium, 1st Annual Meeting. San Francisco, CA, June 19, 1999.
 128. Lawton MT: Cerebral revascularization: Current indications, operative techniques, and results. The Western Neurosurgical Society, 45th Annual Meeting. Coeur d’Alene, ID, September 19, 1999.
 129. Mummaneni, PV, Sneed PK, Gutin PH, Wara WM, Smith V, Verhey L, Petty P, Larson DA, Lawton MT, McDermott MW: Staged radiosurgery for large arteriovenous malformations. The Western Neurosurgical Society, 45th Annual Meeting. Coeur d’Alene, ID, September 20, 1999.
 130. Lawton MT: Anterior circulation aneurysms: Essential techniques for complex aneurysms (Seminar). Congress of Neurological Surgeons Annual Meeting. Boston, MA, November 1, 1999.
 131. Detwiler PW, Porter RW, Spetzler RF, Lawton MT: Conus arteriovenous malformations: Proposal of a new type of spinal arteriovenous lesion. Congress of Neurological Surgeons Annual Meeting. Boston, MA, November 2, 1999.
 132. Mummaneni PV, Lawton MT, Halbach VV, Meyers PM, Lefler JE, Dillon WP: A magnetic resonance angiography technique to image aneurysms around the carotid dural rings. Congress of Neurological Surgeons Annual Meeting. Boston, MA, November 3, 1999.
 133. Detwiler PW, Porter RW, Spetzler RF, Lawton MT, Lemole GM, Sonntag VKH, McDougall CG: Surgical treatment of cervical spinal cord vascular fistulae and malformations: Experience over 16 years. Cervical Spine Research Society, 27th Annual Meeting. Seattle, WA, December 16-18, 1999.
 134. Lawton MT: Management of cortical arteriovenous malformations: Deep cortical AVMs. Joint Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology. New Orleans, LA, February 7, 2000.
 135. Lawton MT: Management of spinal arteriovenous malformations and fistulas. Joint Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology. New Orleans, LA, February 8, 2000.

136. Lawton MT: Transfacial approaches to midline skull base lesions. Neurosurgery Grand Rounds, University of California. San Francisco, CA, March 2, 2000.
137. Detwiler PW, Porter RW, Spetzler RF, Lawton MT: Conus arteriovenous malformation: Proposal of a new type of spinal arteriovenous lesion. Recent Advances in Neurosurgery: 26th Annual BNI Symposium. Phoenix, AZ, March 3, 2000.
138. Lawton MT: Revascularization for aneurysms: Combined surgical and endovascular therapies. Neurosurgery at Jackson Hole. Jackson Hole, WY, March 5, 2000.
139. Lawton MT: Foramen magnum. Annual Meeting of the North American Skull Base Society. Scottsdale, AZ, March 19, 2000.
140. Lawton MT: Stroke prevention and treatment for primary care physicians. American Association of Neurological Surgeons Annual Meeting. San Francisco, CA, April 12, 2000.
141. Lawton MT: Guidelines for multimodality management of infectious intracranial aneurysms. Neurovascular Update: The New Millenium. San Francisco, CA, May 25, 2000.
142. Lawton MT: Surgical management of intracranial dural arteriovenous fistulas. Neurovascular Update: The New Millenium. San Francisco, CA, May 26, 2000.
143. Detwiler PW, Porter RW, Spetzler RF, Han PP, Lawton MT: Conus arteriovenous malformation: Proposal of a new type of spinal arteriovenous lesion. Rocky Mountain Neurosurgical Society Annual Meeting. Alyeska, Alaska, June 24-28, 2000.
144. Lawton MT: Current topics in neurovascular surgery: 1) Revascularization for aneurysms in combined surgical and endovascular therapies; and 2) Surgical management of dural arteriovenous fistulas. UCSF Neurosurgery Grand Rounds. San Francisco, CA, July 13, 2000.
145. Scheuller MC, Quinones-Hinojosa A, Hegarty JL, Lawton MT, Jackler RK: Pontine cavernous malformations: Translabyrinthine approach. National Academy of Otolaryngology-Head and Neck Surgery Meeting. August, 2000.
146. Lawton MT, Chun JY, Wilson CB, Smith WS, Halbach VV, Higashida RT: Management of mycotic intracranial aneurysms: Experience with 20 patients. The Western Neurosurgical Society Annual Meeting. Kohala Coast, Hawaii, September 10, 2000.
147. Lawton MT: Anterior circulation aneurysms: Options and approaches. Congress of Neurological Surgeons Annual Meeting. San Antonio, TX, September 25, 2000.
148. Lawton MT: Multimodality management of arteriovenous malformations. Congress of Neurological Surgeons Annual Meeting. San Antonio, TX, September 26, 2000.
149. Lawton MT: Occlusive cerebrovascular disease (Section on cerebrovascular Surgery II, Moderator). Congress of Neurological Surgeons Annual Meeting. San Antonio, TX, September 27, 2000.
150. Smyth MD, Park E, Sneed PK, Lawton MT, McDermott MW: Stereotactic radiosurgery for pediatric intracranial arteriovenous malformations. AANS/CNS Section on Pediatric Neurological Surgery Annual Meeting. San Diego, CA, December 6-9, 2000.

151. Lawton MT: Cerebral revascularization for non-ischemic cerebrovascular disease. Joint Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology. Big Island, HI, February 11, 2001.
152. Lawton MT: Oral presentations session IVB, Moderator. Joint Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology. Big Island, HI, February 11, 2001.
153. Lawton MT: Basilar apex aneurysms: The first 50 cases. Neurosurgery at Jackson Hole. Teton Village, WT, March 4, 2001.
154. Lawton MT: The operating microscope of the future. Carl Zeiss Focus Group. Phoenix, AZ, March 16, 2001.
155. Lawton MT: New neurosurgical techniques for aneurysms. San Francisco Neurological Society, Annual Meeting. Bodega Bay, CA, March 25, 2001.
156. Lawton MT, Ojemann SG, Vates GE: Functional magnetic resonance imaging and electrocortical stimulation mapping in eloquent arteriovenous malformations (Discussant). American Association of Neurological Surgeons, Annual Meeting. Toronto, Canada, April 23, 2001.
157. Lawton MT: Surgical management of dural arteriovenous fistulae that fail endovascular management. American Association of Neurological Surgeons, Annual Meeting. Toronto, Ontario, Canada, April 25, 2001.
158. Yingling CD, Lawton MT: Multimodality monitoring of cerebral perfusion during surgery for intracranial aneurysms. Society for Neurophysiological Monitoring. New Orleans, LA, May 11, 2001.
159. Johnston SC, Khao S, Lawton MT, Gress DR: Should patients with subarachnoid hemorrhage be transferred to high-volume hospitals? American Academy of Neurology Annual Meeting. Philadelphia, PA, May 5 -12, 2001.
160. Lawton MT: New neurosurgical techniques in the treatment of cerebral aneurysms. California Pacific Medical Center, Grand Rounds. San Francisco, CA, May 24, 2001.
161. Lawton MT: Vascular augmentation techniques for cerebral ischemia. Congress of Neurological Surgeons, 51st Annual Meeting. San Diego, CA, October 2, 2001.
162. Lawton MT: Reinventing neurosurgery – Operative nuances (Course Director). Congress of Neurological Surgeons, 51st Annual Meeting. San Diego, CA, October 2, 2001.
163. Lawton MT: Management of Neurovascular Emergencies. Emergency Department Grand Rounds, University of California, San Francisco. San Francisco, CA, November 28, 2001.
164. Hashimoto T, Lam T, Boudreau NJ, Lawton MT, Bollen AW, Young YL: Abnormal balance in angiotensin-1 and -2 in human brain arteriovenous malformations. American Society of Anesthesiologists Annual Meeting, 2001.
165. Banki NM, Parmley WW, Foster E, Gress DR, Lawton MT, Zaroff JG: Reversibility of left ventricular systolic dysfunction in humans with subarachnoid hemorrhage. American Heart Association, Annual Meeting. Anaheim, CA, November, 2001.

166. Lawton MT: Basilar apex aneurysms: Surgical results and perspectives from an initial experience. Visiting Professor Lecture, Northwestern University. Evanston, IL, February 1, 2002.
167. Quinones-Hinojosa A, Sanai N, Malek JY, Lawton MT: Combined microsurgical and endovascular management of intracranial aneurysms. The Fifth Joint Annual Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology. Dallas, TX, February 4, 2002.
168. Lawton MT: Cerebral revascularization: Difficult and unusual bypasses. The Fifth Joint Annual Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology. Dallas, TX, February 5, 2002.
169. Lawton MT: Basilar apex aneurysms: Surgical results and perspectives from an initial experience. Neurosurgery Grand Rounds, UCSF. San Francisco, CA, February 7, 2002.
170. Lawton MT, Vates GE: Progress in the development of an animal model of arteriovenous malformation. Neurosurgery at Jackson Hole. Jackson Hole, WY, March 3, 2002.
171. Lawton MT: Basilar apex aneurysms: Surgical results and perspectives from an initial experience. Visiting Professor Lecture, Johns Hopkins University. Baltimore, MD, March 21, 2002.
172. Lawton MT: Anatomy and treatment of dural arteriovenous malformations. American Association of Neurological Surgeons, Annual Meeting. Chicago, IL, April 9, 2002.
173. Lawton MT: Basilar apex aneurysms: Surgical results and perspectives from an initial experience. Visiting Professor Lecture, University of Texas – Southwestern Medical Center. Dallas, TX, April 26, 2002.
174. Lawton MT: Technical aspects of aneurysm surgery. Visiting Professor Lecture, University of Texas – Southwestern Medical Center. Dallas, TX, April 26, 2002.
175. Lawton MT: Temporary arterial occlusion in aneurysm surgery. Anesthesiology Grand Rounds, University of California, San Francisco. San Francisco, CA, June 1, 2002.
176. Lawton MT: Treatment of patients with intracranial hemorrhage. American Academy of Neurology, Acute Stroke Management Course. San Francisco, CA, June 1, 2002.
177. Sanai N, Quinones-Hinojosa A, Vates GE, Wilson CB, Lawton MT: Pediatric intracranial aneurysms: The University of California, San Francisco experience in the last 24 years. Congress of Neurological Surgeons, 52nd Annual Meeting. Philadelphia, PA, September 23, 2002.
178. Lawton MT: Freedom to expand the neurosurgeon’s domain (General Scientific Session, Moderator). Congress of Neurological Surgeons, 52nd Annual Meeting. Philadelphia, PA, September 25, 2002.
179. Lawton MT: Posterior circulation aneurysms: Issues and controversies. Congress of Neurological Surgeons, 52nd Annual Meeting. Philadelphia, PA, September 25, 2002.
180. Lawton MT: Spetzler-Martin grade III arteriovenous malformations: Surgical results and a modification of the grading scale. American Academy of Neurological Surgery, 64th Annual Meeting. Scottsdale, AZ, October 17, 2002.

181. Kothavale AA, Banki NM, Kopelnik A, Tung PP, Lawton MT, Drew B, Foster E, Parmley W, Zaroff JG: Predictors of left ventricular dysfunction after subarachnoid hemorrhage. American College of Cardiology, Annual Meeting, 2002.
182. Lawton MT: Microvascular reconstruction and bypass for unclippable/uncoilable aneurysms. Joint Annual Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology. Phoenix, AZ, February 16, 2003.
183. Lawton MT: Surgical and endovascular cerebral revascularization. Joint Annual Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology. Phoenix, AZ, February 17, 2003.
184. Lawton MT: Spetzler-Martin grade III arteriovenous malformations: Surgical results and a modification of the grading scale. Joint Annual Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology. Phoenix, AZ, February 18, 2003.
185. Lawton MT: Management of dural arteriovenous fistulas. Joint Annual Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology. Phoenix, AZ, February 18, 2003.
186. Lawton MT: Prevention and treatment of complications in the management of cerebral aneurysms (Moderator). Joint Annual Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology. Phoenix, AZ, February 19, 2003.
187. Miss JC, Lawton MT, Kopelnik A, Tung PP, Banki NM, Smith WS, Dowd CF, Zaroff JG: Aneurysm clipping vs. coiling after subarachnoid hemorrhage: Effect on cardiac injury and dysfunction. Joint Annual Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology. Phoenix, AZ, February 19, 2003.
188. Lawton MT, Quinones-Hinojosa A, Alam M: Monitoring with motor evoked potentials during basilar aneurysm surgery. Winter Neurosurgical Conference. Bugaboos, British Columbia, Canada, March 17, 2003.
189. Lawton MT: Cardiac injury after aneurysmal subarachnoid hemorrhage. Winter Neurosurgical Conference. Bugaboos, British Columbia, Canada, March 17, 2003.
190. Fisher LA, Gardner D, Ko N, Smith WS, Tung PP, Kopelnik A, Banki NM, Lawton MT, Zaroff JG: Cardiac injury and mortality are common in subarachnoid hemorrhage patients with hypernatremia. American Academy of Neurology, 55th Annual Meeting. Honolulu, HI, March 29-April 5, 2003.
191. Lawton MT: Interim results of the Japanese EC-IC Bypass Trial (Discussant). Japanese/American Joint Symposium, American Association of Neurological Surgeons, Annual Meeting. San Diego, CA, April 25, 2003.
192. Lawton MT: Management of the asymptomatic intracranial aneurysms. American Association of Neurological Surgeons, Annual Meeting. San Diego, CA, April 28, 2003.

193. Lawton MT: How I do it: Vascular microsurgery (Advanced techniques for complex intracranial aneurysms). American Association of Neurological Surgeons, Annual Meeting. San Diego, CA, April 29, 2003.
194. Kothavale AA, Banki NM, Kopelnik A, Tung PP, Lawton MT, Drew B, Foster E, Parmley W, Zaroff JG: Severity of brain injury is a strong predictor of left ventricular dysfunction after subarachnoid hemorrhage. American Society of Echocardiography, 14th Annual Meeting. Toronto, Ontario, Canada, June 11-14, 2003.
195. Lawton MT: Spetzler-Martin grade III arteriovenous malformations: Surgical results and a modification of the grading scale. UCSF Department of Neurological Surgery Grand Rounds. San Francisco, CA, July 10, 2003.
196. Lawton MT: The operating microscope of the future. Carl Zeiss Focus Group. Phoenix, AZ, September 13, 2003.
197. Lawton MT: Microsurgical treatment of aneurysms: Back to the future. Congress of Neurological Surgeons, Annual Meeting. Denver, CO, October 21, 2003.
198. Lawton MT, Quinones-Hinojosa A: Intraoperative electrophysiological monitoring of the cerebrum during cerebrovascular and tumor surgery. Congress of Neurological Surgeons, Annual Meeting. Denver, CO, October 21, 2003.
199. Lawton MT: Microsurgical clipping of basilar artery aneurysms: Technique video. Congress of Neurological Surgeons, Annual Meeting. Denver, CO, October 18-23, 2003.
200. Lawton MT: Pathogenesis, pathophysiology, and experimental models of arteriovenous malformations and dural fistulas. AANS/CNS Cerebrovascular Section and The American Society of Interventional & Therapeutic Neuroradiology Annual Meeting. San Diego, CA, February 1, 2004.
201. Lawton MT: Surgical treatment of dural arteriovenous fistulas. AANS/CNS Cerebrovascular Section and The American Society of Interventional & Therapeutic Neuroradiology Annual Meeting. San Diego, CA, February 1, 2004.
202. Lawton MT: Management of intracranial atherosclerotic diseases (Moderator). AANS/CNS Cerebrovascular Section and The American Society of Interventional & Therapeutic Neuroradiology Annual Meeting. San Diego, CA, February 2, 2004.
203. Quinones-Hinojosa A, Alam M, Lyon R, Lawton MT: Transcranial motor evoked potentials during basilar aneurysm surgery: Technique application in 30 consecutive patients. AANS/CNS Cerebrovascular Section and The American Society of Interventional & Therapeutic Neuroradiology Annual Meeting. San Diego, CA, February 2, 2004.
204. Smith WS, Dowd CF, Johnston SC, Ko N, DeArmond S, Dillon WP, Setty D, Lawton MT, Halbach VV: Neurotoxicity of intraarterial papaverine used for the treatment of cerebral vasospasm after aneurysmal subarachnoid hemorrhage. AANS/CNS Cerebrovascular Section and The American Society of Interventional & Therapeutic Neuroradiology Annual Meeting. San Diego, CA, February 2, 2004.

205. Du R, Young WL, Lawton MT: "Tangential" resection of medial temporal lobe arteriovenous malformations with the orbitozygomatic approach: Technique assessment. AANS/CNS Cerebrovascular Section and The American Society of Interventional & Therapeutic Neuroradiology Annual Meeting. San Diego, CA, February 3, 2004.
206. Lawton MT: Thrombotic intracranial aneurysms: Classification scheme and management strategies. Neurosurgery at Jackson Hole. Teton Village, WY, March 7, 2004.
207. Lawton MT: Management of the asymptomatic vascular lesion (Intracranial aneurysms). American Association of Neurological Surgeons Annual Meeting. Orlando, FL, May 4, 2004.
208. Lawton MT: How I do it: Vascular microsurgery (Microsurgical techniques for giant intracranial aneurysms). American Association of Neurological Surgeons Annual Meeting. Orlando, FL, May 5, 2004.
209. Quinones-Hinojosa A, Chang EF, Yu T, Lawton MT: Thrombotic intracranial aneurysms: Classification scheme and management strategies. Rocky Mountain Neurosurgical Society Annual Meeting. Squaw Valley, CA, June 14, 2004.
210. Lawton MT, Quinones-Hinojosa A, Chang EF, Yu T: Thrombotic intracranial aneurysms: Classification scheme and management strategies. Western Neurosurgical Society, 50th Annual Meeting. San Diego, CA, September 13, 2004.
211. Lawton MT, Stewart CL, Wulfstat AA, Derugin N, Hashimoto T, Young WL: The transgenic arteriovenous fistula in the rat: An experimental model of gene therapy for brain arteriovenous malformations. American Academy of Neurological Surgery Annual Meeting, Joint Meeting with the German Academy and German Society of Neurosurgery. Dresden, Germany, October 6, 2004.
212. Lawton MT: Skull base approaches for cerebral aneurysms: Practical course. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 17, 2004.
213. Lawton MT: Neurosurgery at the crossroads: Multidisciplinary management of brain arteriovenous malformations. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 20, 2004.
214. Lawton MT: Management of unruptured intracranial aneurysms. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 20, 2004.
215. Sanai N, Tramontin AD, Quinones-Hinojosa A, Barbaro NM, Gupta N, Kunwar S, Lawton MT, McDermott MW, Parsa AT, Garcia-Verdugo JM, Berger MS, Alvarez-Buylla A: Unique periventricular niche in adult human brain contains astrocytic stem cells but no evidence of chain migration. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 20, 2004.
216. Lawton MT: The current status of cerebral revascularization. UCSF Vascular Surgery Grand Rounds. San Francisco, CA, November 3, 2004.
217. Lawton MT: Update on the microsurgical and endovascular management of intracranial aneurysms. Enloe Medical Center Rounds. Chico, CA, November 11, 2004.

218. Lawton MT: Microvascular and bypass reconstruction for unclippable and uncoilable aneurysms: Video symposium. First International Symposium on Selected Topics in Cerebral Vascular Diseases. Leon, Guanajuato, Mexico, November 19, 2004.
219. Lawton MT: Arteriovenous malformations: Patient selection, surgical treatment, and multidisciplinary strategies. First International Symposium on Selected Topics in Cerebral Vascular Diseases. Leon, Guanajuato, Mexico, November 20, 2004.
220. Lawton MT: Combined microsurgical and endovascular management of complex intracranial aneurysms: Video symposium. First International Symposium on Selected Topics in Cerebral Vascular Diseases. Leon, Guanajuato, Mexico, November 20, 2004.
221. Sanchez-Mejia R, Lawton MT: Microsurgical treatment of pediatric arteriovenous malformations: Recent UCSF experience. AANS/CNS Section on Pediatric Neurological Surgery Annual Meeting. San Francisco, CA, December 10, 2004.
222. Sanai N, Lawton MT: Pediatric intracranial aneurysms: Durability of treatment following microsurgical and endovascular management. AANS/CNS Section on Pediatric Neurological Surgery Annual Meeting. San Francisco, CA, December 10, 2004.
223. Lawton MT: Acute stroke management: Current status of cerebral revascularization. AANS/CNS Cerebrovascular Section and The American Society of Interventional & Therapeutic Neuroradiology Annual Meeting. New Orleans, LA, February 1, 2005.
224. Du R, Dowd CF, Johnston SC, Young WL, Lawton MT: Interobserver variability of brain arteriovenous malformations using the the Spetzler-Martin grading system. AANS/CNS Cerebrovascular Section and The American Society of Interventional & Therapeutic Neuroradiology Annual Meeting. New Orleans, LA, February 3, 2005.
225. Lawton MT: Current indications for cerebral revascularization. San Francisco Neurological Society, 57th Annual Meeting. Carmel, CA, March 12, 2005.
226. Du R, Dowd CF, Johnston SC, Young WL, Lawton MT: Interobserver variability of brain arteriovenous malformations using the the Spetzler-Martin grading system (Kaiser Award). San Francisco Neurological Society, 57th Annual Meeting. Carmel, CA, March 13, 2005.
227. Lawton MT: Effect of surgical experience on outcomes from intraoperative aneurysmal rupture. Neurosurgery at Jackson Hole. Teton Village, WY, March 13, 2005.
228. Lawton MT: Complications and Avoidance in Interventional Neurovascular Disease: Surgical management of endovascular complications. American Association of Neurological Surgeons, Annual Meeting. New Orleans, LA, April 17, 2005.
229. Lawton MT: How I do it – Vascular microsurgery: Cerebral revascularization for complex aneurysms. American Association of Neurological Surgeons, Annual Meeting. New Orleans, LA, April 18, 2005.
230. Lawton MT: Evaluation of the stability of ruptured aneurysms after embolization with Guglielmi detachable coils: Correlation between coil packing ratio and coil compaction, Discussant. American Association of Neurological Surgeons, Annual Meeting. New Orleans, LA, April 18, 2005.

231. Lawton MT: Management of asymptomatic vascular malformations. American Association of Neurological Surgeons, Annual Meeting. New Orleans, LA, April 20, 2005.
232. Lawton MT: Difficult aneurysms: Microsurgical management of giant intracranial aneurysms. The 34th Annual Meeting of Japanese Society on Surgery for Cerebral Stroke. Morioka, Japan, April 23, 2005.
233. Lawton MT: Classification scheme and management strategies for thrombotic intracranial aneurysms. The 34th Annual Meeting of Japanese Society on Surgery for Cerebral Stroke. Morioka, Japan, April 23, 2005.
234. Lawton MT: Classification scheme and management strategies for thrombotic intracranial aneurysms. Visiting Professor, Loma Linda University. Loma Linda, CA, May 11, 2005.
235. Lawton MT, Pawlikowska L, Kwok PY, Zaroff J, Young WL: Genetic polymorphisms in patients with brain arteriovenous malformations: Implications for pathophysiology, diagnosis, and treatment. Western Neurosurgical Society Annual Meeting. Lake Tahoe, CA, September 19, 2005.
236. Lawton MT, Pawlikowska L, Kwok PY, Zaroff J, Young WL: Genetic polymorphisms in patients with brain arteriovenous malformations: Implications for pathophysiology, diagnosis, and treatment. American Academy of Neurological Surgery Annual Meeting. Half Moon Bay, CA, September 24, 2005.
237. Lawton MT: Management of posterior circulation aneurysms (Moderator). Congress of Neurological Surgeons. Boston, MA, October 10, 2005.
238. Lawton MT: Advanced strategies for the treatment of intracranial aneurysms (Moderator). Congress of Neurological Surgeons. Boston, MA, October 10, 2005.
239. Lawton MT: Skull base techniques for aneurysm surgery. Approaches to the Skull Base for Senior Neurosurgical Residents. Palm Beach Gardens, FL, November 4-5, 2005.
240. Lawton MT: Surgical management of posterior circulation aneurysms. Visiting Professor Lecture, New York University. New York, NY, December 2, 2005.
241. Du R, Zhu Y, Yang GY, Young WL, Lawton MT: Pathogenesis of dural arteriovenous fistulas by cerebral venous hypertension in rats. AANS/CNS Cerebrovascular Section and The American Society of Interventional & Therapeutic Neuroradiology Annual Meeting. Orlando, FL, February 18, 2006.
242. Lawton MT: Management of intracranial occlusive disease: Revascularization for complex aneurysms. AANS/CNS Cerebrovascular Section and The American Society of Interventional & Therapeutic Neuroradiology Annual Meeting. Orlando, FL, February 19, 2006.
243. Lawton MT: Predictors of success in academic neurosurgery. Neurosurgery at Jackson Hole. Jackson Hole, WY, March 5, 2006.
244. Lawton MT: Interventional neurovascular disease: Management, complications, and avoidance strategies. American Association of Neurological Surgeons, Annual Meeting. San Francisco, CA, April 23, 2006.

245. Lawton MT: Multidisciplinary management of cerebral arteriovenous malformations: Patient selection. American Association of Neurological Surgeons, Annual Meeting. San Francisco, CA, April 24, 2006.
246. Lawton MT: Management of asymptomatic vascular lesions: Arteriovenous malformations. American Association of Neurological Surgeons, Annual Meeting. San Francisco, CA, April 24, 2006.
247. Lawton MT: Correlative microvascular anatomy as a guide to better surgery: Insular arteriovenous malformations. American Association of Neurological Surgeons, Annual Meeting. San Francisco, CA, April 24, 2006.
248. Lawton MT: Surgical outcome of flow reversal treatment for complex cerebral aneurysms (Moderator). American Association of Neurological Surgeons, Annual Meeting. San Francisco, CA, April 24, 2006.
249. Lawton MT: How I do it: Vascular microsurgery. American Association of Neurological Surgeons, Annual Meeting. San Francisco, CA, April 25, 2006.
250. Lawton MT: Current controversies in cavernous malformation management: Surgical approaches. American Association of Neurological Surgeons, Annual Meeting. San Francisco, CA, April 26, 2006.
251. Sanchez-Mejia RO, Young WL, Gupta N, Lawton MT: Superior outcomes in pediatric patients compared with adults after microsurgical AVM resection. American Association of Neurological Surgeons, Annual Meeting. San Francisco, CA, April 26, 2006.
252. Lawton MT: Neurosurgery with the masters: The quest for mastery in vascular neurosurgery. American Association of Neurological Surgeons, Annual Meeting. San Francisco, CA, April 27, 2006.
253. Lawton MT: The pathway of development in vascular neurosurgery. Grand Rounds, University of California San Francisco. San Francisco, CA, June 1, 2006.
254. Lawton MT: Hemodynamics of brain aneurysms: Rethinking their pathogenesis, rupture, and treatment. Innovations in Medical and Surgical Care Conference. Honolulu, HI, June 17, 2006.
255. Sanchez-Mejia RO, Lawton MT: An update on cerebral revascularization. 2nd International Conference on Intracranial Atherosclerosis. San Francisco, CA, August 12, 2006.
256. Lawton MT: Beyond the BNI: Finding one's way in vascular neurosurgery. The John Green Lecture, Barrow Neurological Institute. Phoenix, AZ, September 8, 2006.
257. Lawton MT: Sylvian fissure arteriovenous malformations. Western Neurosurgical Society Annual Meeting. Blaine, WA, September 18, 2006.
258. Lawton MT: Update on cerebral revascularization. Sonoma Valley Hospital Continuing Medical Education. Sonoma, CA, September 21, 2006.
259. Lawton MT: Modern management of posterior circulation aneurysms: Surgery for basilar apex and trunk aneurysms. Congress of Neurological Surgeons Annual Meeting. Chicago, IL, October 9, 2006.

260. Lawton MT: Double reimplantation technique to reconstruct arterial bifurcations with giant aneurysms (CNS Video Theater). Congress of Neurological Surgeons Annual Meeting. Chicago, IL, October 9-11, 2006.
261. Lawton MT: Insights in the pathogenesis of dural arteriovenous fistulae from an experimental rat model. American Academy of Neurological Surgery Annual Meeting. Reynolds Plantation, GA, October 20, 2006.
262. Lawton MT: Surgical management of posterior circulation aneurysms (Keynote Address). 2006 Conference of Asia Academic Neurosurgeons. Shanghai, China, November 12, 2006.
263. Lawton MT: Intracranial arteriovenous malformations. 8th International Conference on Cerebrovascular Surgery. Taipei, Taiwan, December 1, 2006.
264. Lawton MT: Surgical management of AVMs: Patient Selection. 8th International Conference on Cerebrovascular Surgery. Taipei, Taiwan, December 2, 2006.
265. Lawton MT: Surgical management of posterior circulation aneurysms. 8th International Conference on Cerebrovascular Surgery. Taipei, Taiwan, December 3, 2006.
266. Lawton MT: Update on cerebral aneurysms: Surgical, endovascular, and combination therapies. Marin General Hospital Grand Rounds. Larkspur, CA, December 5, 2006.
267. Lawton MT: Bypass surgery for intracranial aneurysms. 7th Annual International Congress on Cerebral Revascularization, Hands-on Course on microanastomosis and EC-IC Bypass Techniques. St. Louis, MO, January 12-13, 2007.
268. Lawton MT: Central nervous system vascular malformations in depth (Moderator). International Stroke Conference. San Francisco, CA, February 8, 2007.
269. Lawton MT: Tentorial dural arteriovenous fistulae: Operative strategies and microsurgical results for 6 subtypes. Neurosurgery at Jackson Hole. Jackson Hole, WY, March 5, 2007.
270. Lawton MT: Interventional neurovascular disease: Management, complications, and avoidance strategies (Co-director). American Association of Neurological Surgeons Annual Meeting. Washington, D.C., April 14, 2007.
271. Lawton MT: Cavernous malformations: Current controversies in management. American Association of Neurological Surgeons Annual Meeting. Washington, D.C., April 16, 2007.
272. Lawton MT: Progression of disease in unilateral moyamoya syndrome (Discussant). American Association of Neurological Surgeons Annual Meeting. Washington, D.C., April 16, 2007.
273. Lawton MT: Multidisciplinary management of cerebral AVMs: Patient selection. American Association of Neurological Surgeons Annual Meeting. Washington, D.C., April 17, 2007.
274. Lawton MT: Management of asymptomatic vascular lesions: Cavernous malformations. American Association of Neurological Surgeons Annual Meeting. Washington, D.C., April 17, 2007.

275. Lawton MT: Correlative microvascular anatomy as a guide to better surgery: Arteriovenous malformations in the temporal lobe. American Association of Neurological Surgeons Annual Meeting. Washington, D.C., April 17, 2007.
276. Lawton MT: How I do it: Vascular microsurgery. American Association of Neurological Surgeons Annual Meeting. Washington, D.C., April 18, 2007.
277. Lawton MT, Young WL: Cerebrovascular clinical and research programs. Society of Neurological Surgeons Annual Meeting. San Francisco, CA, May 6, 2007.
278. Lawton MT: Cerebrovascular reconstruction in aneurysm surgery. Japanese Congress of Neurological Surgeons. Sendai, Japan, May 19, 2007.
279. Lawton MT: Management and selection of Spetzler-Martin grade III arteriovenous malformations. Japanese Congress of Neurological Surgeons. Sendai, Japan, May 20, 2007.
280. Lawton MT: Finding one's way in neurosurgery after graduation. Grand Rounds, University of California, San Diego. San Diego, CA, June 15, 2007.
281. Lawton MT: Update on the microsurgical treatment of aneurysms. Neurosurgery Update in the Wine Country. Napa, CA, August 4, 2007.
282. Lawton MT: Modern indications and techniques for open aneurysm surgery: Posterior circulation aneurysms and skull base surgical techniques. Congress of Neurological Surgeons Annual Meeting. San Diego, CA, September 16, 2006.
283. Lawton MT: Modern management of posterior circulation aneurysms. Congress of Neurological Surgeons Annual Meeting. San Diego, CA, September 17, 2006.
284. Sanchez-Mejia RO, Halbach VV, Lawton MT: Tentorial dural arteriovenous fistulae: Operative strategies and microsurgical results for six subtypes. Congress of Neurological Surgeons Annual Meeting. San Diego, CA, September 17, 2006.
285. Lawton MT: Interactive case discussions in cerebrovascular surgery. Congress of Neurological Surgeons Annual Meeting. San Diego, CA, September 20, 2006.
286. Lawton MT: Vascular neurosurgery. St. Louis Research Meeting. St. Louis, MO, October 12-13, 2007.
287. Lawton MT: Anesthetic and perioperative management of patients undergoing aneurysm surgery. American Society of Anesthesiologists, Annual Meeting. San Francisco, CA, October 14, 2007.
288. Lawton MT, Sanchez-Mejia RO, Halbach VV: Tentorial dural arteriovenous fistulae: Operative strategies and microsurgical results for six types. American Academy of Neurological Surgery, Annual Meeting. Lake Las Vegas, NV, November 1, 2007.
289. Lawton MT: Approaches to the skull base. Anspach Cadaveric Dissection Course. West Palm Beach, FL, November 9-10, 2007.

290. Lawton MT: The current role of microsurgery for posterior circulation aneurysms: A selective approach in the endovascular era. Grand Rounds, University of California, San Francisco. San Francisco, CA, November 15, 2007.
291. Lawton MT; Cerebral revascularization for complex intracranial aneurysms. The 1st World Congress on Cerebral Revascularization and The 8th Annual Microanastomosis Workshop. St. Louis, MO, January 11-12, 2008.
292. Lawton MT: Skull base surgical approaches for infratentorial cavernous malformations. International Stroke Conference. New Orleans, LA, February 22, 2008.
293. Lawton MT: Surgical management of previously coiled aneurysms. Neurosurgery at Jackson Hole. Jackson Hole, WY, March 3, 2008.
294. Lawton MT: How basic sciences can help the surgical management of brain arteriovenous malformations. Biology of Vascular Malformations of the Brain. Washington, D.C., March 14, 2008.
295. Lawton MT: Interventional neurovascular disease: Management, complications, and avoidance strategies. American Association of Neurological Surgeons Annual Meeting. Chicago, IL, April 27, 2008.
296. Lawton MT: How I do it: Vascular microsurgery. American Association of Neurological Surgeons Annual Meeting. Chicago, IL, April 28, 2008.
297. Lawton MT: Cavernous malformations: Surgical approaches to deep lesions. American Association of Neurological Surgeons Annual Meeting. Chicago, IL, April 29, 2008.
298. Lawton MT: Multidisciplinary management of cerebral AVMs: Patient selection. American Association of Neurological Surgeons Annual Meeting. Chicago, IL, April 30, 2008.
299. Lawton MT: Management of asymptomatic vascular lesions: Cavernous malformations. American Association of Neurological Surgeons Annual Meeting. Chicago, IL, April 30, 2008.
300. Lawton MT: Evolving perspectives on brain arteriovenous malformations. Washington State Association of Neurological Surgeons Annual Meeting. Seattle, WA, May 31, 2008.
301. Lawton MT: Clinical and basic research collaborations in cerebrovascular surgery. Society of University Neurosurgeons Annual Meeting. San Francisco, CA, June 30, 2008.
302. Lawton MT: Complication avoidance with brain arteriovenous malformations. Cerebrovascular Complications Conference. Jackson Hole, WY, July 11, 2008.
303. Lawton MT: Agony and ecstasy of neurosurgery. Combined Travel Club (Hephestus, Aequanimitas, and Kasdon Society Research Meeting). Jackson Hole, WY, July 14, 2008.
304. Lawton MT: Update on open versus endovascular treatment of aneurysms. Neurosurgery Update 2008 in the Wine Country. Napa, CA, July 26, 2008.
305. Lawton MT, Waldron JS: Microsurgical management of incompletely coiled and recurrent aneurysms: Trends, techniques, and observations on coil extrusion. American Academy of Neurological Surgery, Annual Meeting. Sedona, AZ, September 11, 2008.

306. Lawton MT: How I operate a brain AVM. 27th Brazilian Congress of Neurosurgery. Iguassu Falls, Brazil, September 14, 2008.
307. Lawton MT: Laboratory models of arteriovenous malformations. 27th Brazilian Congress of Neurosurgery. Iguassu Falls, Brazil, September 15, 2008.
308. Lawton MT: Patient selection with brain arteriovenous malformations. 27th Brazilian Congress of Neurosurgery. Iguassu Falls, Brazil, September 15, 2008.
309. Lawton MT: Microsurgical management of tentorial dural arteriovenous fistulas. 27th Brazilian Congress of Neurosurgery. Iguassu Falls, Brazil, September 16, 2008.
310. Lawton MT: Searching for excellence in the treatment of brain arteriovenous malformations. 27th Brazilian Congress of Neurosurgery. Iguassu Falls, Brazil, September 14, 2008.
311. Lawton MT: Modern indications and techniques for open aneurysm surgery. Congress of Neurological Surgeons Annual Meeting. Orlando, FL, September 21, 2008.
312. Lawton MT: Management of posterior circulation aneurysms. Congress of Neurological Surgeons Annual Meeting. Orlando, FL, September 22, 2008.
313. Lawton MT: Intraoperative salvage techniques: Getting out of trouble in surgery for brain arteriovenous malformations. Congress of Neurological Surgeons Annual Meeting. Orlando, FL, September 24, 2008.
314. Lawton MT: Vascular case forum. Congress of Neurological Surgeons Annual Meeting. Orlando, FL, September 25, 2008.
315. Lawton MT: Bypass techniques for complex aneurysms. Congress of Neurological Surgeons Annual Meeting. Orlando, FL, September 25, 2008.
316. Lawton MT: Extracranial-intracranial versus intracranial-intracranial bypass for complex aneurysms. Visiting Professor, Allegheny General Hospital. Pittsburgh, PA, December 10, 2008.
317. Lawton MT: High-flow bypass for complex brain aneurysms. The 2nd World Congress on Cerebral Revascularization and 9th Course on Microanastomosis & EC-IC Bypass Techniques. St. Louis, MO, January 10-11, 2009.
318. Kim H, McCulloch CE, Johnston SC, Lawton MT, Sidney S, Young WL: Comparison of two approaches for determining the natural history risk of brain arteriovenous malformation rupture. International Stroke Conference. San Diego, CA, February 18, 2009.
319. Lawton MT: Microsurgical techniques for brain arteriovenous malformations. Neurosurgery in the Rockies. Beaver Creek, CO, February 24, 2009.
320. Lawton MT: What not to do to the cerebral arteries. The Winter Clinics for Spinal & Cranial Surgery. Snowmass, CO, February 25, 2009.
321. Lawton MT, Young WL: A supplemental grading scale for brain arteriovenous malformations. Neurosurgery at Jackson Hole. Jackson Hole, WY, March 2, 2009.

322. Lawton MT: Surgical management of cavernous malformation. Angioma Alliance Conference. San Francisco, CA, April 4, 2009.
323. Lawton MT: Interventional neurovascular disease: Complication avoidance and management: Surgery for previously coiled aneurysms. American Association of Neurological Surgeons Annual Meeting. San Diego, CA, May 3, 2009.
324. Lawton MT: Multidisciplinary management of cerebral AVMs: Supplemental grading system for patient selection. American Association of Neurological Surgeons Annual Meeting. San Diego, CA, May 4, 2009.
325. Lawton MT: Endovascular treatment or neurosurgical clipping of ruptured intracranial aneurysms: Effect on angiographic vasospasm, delayed ischemic neurological deficit, and cerebral infarction (Discussant). American Association of Neurological Surgeons Annual Meeting. San Diego, CA, May 4, 2009.
326. Lawton MT: Current controversies in management of cavernous malformations: Surgical approaches to supratentorial lesions. American Association of Neurological Surgeons Annual Meeting. San Diego, CA, May 6, 2009.
327. Sanai N, Zador Z, Lawton MT: Analysis of extracranial-intracranial versus intracranial-intracranial bypass for complex brain aneurysms. American Association of Neurological Surgeons Annual Meeting. San Diego, CA, May 6, 2009.
328. Lawton MT: Aneurysm complications and saves. Cerebrovascular Complications Conference. Jackson Hole, WY, July 9, 2009.
329. Lawton MT: Surgical anatomy, technical nuances, and complication avoidance: Bypass surgery for aneurysms. Cerebrovascular Complications Conference. Jackson Hole, WY, July 10, 2009.
330. Lawton MT: Update on bypass surgery for complex aneurysms. Neurosurgery Update in the Wine Country. Napa, CA, July 30, 2009.
331. Lawton MT: Systematization of surgical approaches for supratentorial cavernous malformations. Neurosurgery Update in the Wine Country. Napa, CA, July 30, 2009.
332. Lawton MT: Bypass surgery for complex brain aneurysms: Onward to intracranial-intracranial bypass. Neurosymposium 2009: Cerebral Revascularization in New York City. New York, NY, August 28, 2009.
333. Lawton MT: Microvascular neurosurgery of aneurysms: A comprehensive review of basic and sophisticated surgical techniques (basilar apex aneurysms). XIV World Congress of Neurological Surgery. Boston, MA, August 30, 2009.
334. Lawton MT: Cerebrovascular Video Session. XIV World Congress of Neurological Surgery. Boston, MA, August 31, 2009.
335. Lawton MT: Intracranial stenosis: Surgical, endovascular, and medical management (high-flow bypass). XIV World Congress of Neurological Surgery. Boston, MA, September 1, 2009.

336. Lawton MT: Aneurysm round table: Watch, clip, or coil? XIV World Congress of Neurological Surgery. Boston, MA, September 1, 2009.
337. Lawton MT: A supplementary grading system for brain arteriovenous malformations and application to 300 surgical patients. Western Neurosurgical Society, Annual Meeting. Sunriver, OR, September 12, 2009.
338. Lawton MT: Lori Lynn Lawton: Her journey through my neurosurgical world. Gainey Visiting Professor Lecture. Rochester, MN, October 6, 2009.
339. Lawton MT: Revascularization for complex brain aneurysms: Onward to intracranial-intracranial bypass. Mayo Neurosurgery and Neurology Grand Rounds/Gainey Visiting Professor Lecture. Rochester, MN, October 7, 2009.
340. Lawton MT: Open aneurysm surgery: Basic techniques for basilar artery apex aneurysms. Congress of Neurological Surgeons. New Orleans, LA, October 25, 2009.
341. Lawton MT: Excellence in global neurosurgery: Intracranial-to-intracranial bypass surgery for complex aneurysms. Congress of Neurological Surgeons. New Orleans, LA, October 25, 2009.
342. Lawton MT: Management of cranial vascular malformations. Congress of Neurological Surgeons. New Orleans, LA, October 26, 2009.
343. Lawton MT: Pursuing excellence in the treatment of brain AVMs: Natural history and surgical risk assessment. Congress of Neurological Surgeons. New Orleans, LA, October 27, 2009.
344. Lawton MT: Management of complications in aneurysm surgery: Intraoperative aneurysm rupture, ICG videoangiography, and bypass techniques. Congress of Neurological Surgeons. New Orleans, LA, October 28, 2009.
345. Lawton MT: Surgical approaches to infratentorial cavernous malformations. North Shore University Grand Rounds. Manhasset, NY, November 3, 2009.
346. Lawton MT: Microsurgical management of incompletely coiled and recurrent aneurysms. Neurovascular Symposium on Brain Aneurysms: State-of-the-Art Multidisciplinary Treatment Modalities. Manhasset, NY, November 3, 2009.
347. Lawton MT: A supplementary grading system for brain arteriovenous malformations and application to 300 patients. American Academy of Neurological Surgery Annual Meeting. Palm Beach, FL, November 5, 2009.
348. Lawton MT: High-flow bypass in aneurysm surgery. 3rd World Congress on Cerebral Revascularization and 10th Annual Course on Microanastomosis and EC-IC Bypass Techniques. St. Louis, MO, January 8-10, 2010.
349. Lawton MT: Expert panel on brain aneurysms. AANS/CNS Cerebrovascular Section Annual Meeting. San Antonio, TX, February 23, 2010.
350. Lawton MT: Microsurgical management of incompletely treated and recurrent aneurysms. AANS/CNS Cerebrovascular Section Annual Meeting. San Antonio, TX, February 23, 2010.

351. Lawton MT: Cutting edge and future treatments for unruptured aneurysms. International Stroke Conference. San Antonio, TX, February 24, 2010.
352. Lawton MT: Surgical management of parafalcine and midline arteriovenous malformations. Neurosurgery at Jackson Hole. Jackson Hole, WY, March 1, 2010.
353. Lawton MT: Four approaches to the anterior communicating artery: Orbitozygomatic approach. University of Colorado Resident Course. Denver, CO, April 16, 2010.
354. Lawton MT: Current controversies in the management of cavernous malformations: Supratentorial cavernous malformations. American Association of Neurological Surgeons, Annual Meeting. Philadelphia, PA, May 3, 2010.
355. Lawton MT: Controversies in Cerebrovascular and endovascular neurosurgery: Giant aneurysms. American Association of Neurological Surgeons, Annual Meeting. Philadelphia, PA, May 4, 2010.
356. Lawton MT: Update on neurosurgical treatment of aneurysms, subarachnoid hemorrhage, and intracerebral hemorrhage. Stroke Series, San Joaquin Community Hospital. Bakersfield, CA, May 18, 2010.
357. Lawton MT: Current state of aneurysm surgery. Visiting Professor Lecture, Oregon Health Sciences University. Portland, OR, May 22, 2010.
358. McDermott M, Seymour Z, Ma L, Descovich M, Larson D, Dowd C, Halbach V, Lawton M, Young W, Sneed P: Volume staged radiosurgery for large AVMs: Long-term results and a change in protocol. 15th International Meeting of the Leksell Gamma Knife Society. Athens, Greece, May 2010.
359. Lawton MT: Current state of aneurysm surgery. Guest Lecturer, Midwest Neurosurgical Society. Iowa City, IA, June 5, 2010.
360. Lawton MT: Giant middle cerebral artery aneurysm complications. Cerebrovascular Complications Conference. Jackson Hole, WY, July 12, 2010.
361. Lawton MT: Aneurysms 101: Clipping techniques for posterior communicating artery, middle cerebral artery, and anterior communicating artery aneurysms. UCSF Neurosurgery Update 2010 in the Wine Country. Sonoma, CA, July 31, 2010.
362. Lawton MT: Current state of aneurysm surgery. Visiting Professor Lecture, North Shore University. Evanston, IL, August 20, 2010.
363. Lawton MT: Current state of aneurysm surgery. Matthew Wood Lecture, Semmes Murphey Neurologic and Spine Institute. Memphis, TN, September 24, 2010.
364. Lawton MT: Regionalization of cerebrovascular neurosurgical care. Western Neurosurgical Society Annual Meeting. Sante Fe, NM, October 11, 2010.
365. Lawton MT: Surgical management of giant intracranial aneurysms. Korean Neurosurgical Society, 50th Annual Meeting. Seoul, Korea, October 14, 2010.
366. Lawton MT: Patient selection, surgery, and biology of brain arteriovenous malformations. Korean Neurosurgical Society, 50th Annual Meeting. Seoul, Korea, October 14, 2010.

367. Lawton MT: Cerebral revascularization: Intracranial-to-intracranial bypass. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 17, 2010.
368. Lawton MT: Open aneurysm surgery: Basilar apex aneurysms. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 17, 2010.
369. Lawton MT: Hematology and coagulation for neurosurgeons: Vascular neurosurgery. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 18, 2010.
370. Lawton MT: Seven Aneurysms: Techniques and tenets for clipping. San Francisco Museum of Modern Art. San Francisco, CA, October 18, 2010.
371. Lawton MT: Unruptured aneurysm management strategies: Bypass. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 19, 2010.
372. Lawton MT: Complications of aneurysm surgery: Intraoperative rupture. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 20, 2010.
373. Lawton MT: Bypass for giant intracranial aneurysms (Digital masters symposium). Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 21, 2010.
374. Lawton MT: Vascular/endovascular cases with the masters. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 21, 2010.
375. Lawton MT: Supratentorial cavernous malformations in eloquent and deep locations: Surgical approaches and outcomes. American Academy of Neurological Surgery, Annual Meeting. Pebble Beach, CA, November 5, 2010.
376. Lawton MT: Surgical management of arteriovenous malformations. Annual Congress of Neurology, Psychiatry, and Neurosurgery; 53rd Congress of Chilean Neurosurgery. Coquimbo, Chile, November 11, 2010.
377. Lawton MT: Surgical management of posterior circulation aneurysms. Annual Congress of Neurology, Psychiatry, and Neurosurgery; 53rd Congress of Chilean Neurosurgery. Coquimbo, Chile, November 11, 2010.
378. Lawton MT: Bypass surgery for complex aneurysms. Annual Congress of Neurology, Psychiatry, and Neurosurgery; 53rd Congress of Chilean Neurosurgery. Coquimbo, Chile, November 11, 2010.
379. Lawton MT: The current state of aneurysm surgery. Visiting Professor Lecture, Johns Hopkins Hospital. Baltimore, MD, December 9, 2010.
380. Lawton MT: Evolving perspectives on brain arteriovenous malformations. Sally Harrington Goldwater Lecture, Barrow Neurological Institute. Phoenix, AZ, January 14, 2011.
381. Lawton MT: Avoiding disasters in arteriovenous malformation surgery. AANS/CNS Cerebrovascular Section Annual Meeting. Los Angeles, CA, February 8, 2011.
382. Lawton MT: Surgical revascularization in the prevention of posterior circulation stroke. International Stroke Conference. Los Angeles, CA, February 9, 2011.

383. Lawton MT: Surgical management of basilar artery apex aneurysms. World Federation of Neurosurgical Societies (WFNS) Educational Course. Phuket, Thailand, February 17, 2011.
384. Lawton MT: Surgical management of supratentorial cavernous malformations. World Federation of Neurosurgical Societies (WFNS) Educational Course. Phuket, Thailand, February 17, 2011.
385. Lawton MT: Surgical management of giant and complex aneurysms. The 14th Association of Southeast Asian Nations (ASEAN) Congress of Neurological Surgery. Phuket, Thailand, February 18, 2011.
386. Lawton MT: Surgical management and patient selection of brain arteriovenous malformations. The 14th Association of Southeast Asian Nations (ASEAN) Congress of Neurological Surgery. Phuket, Thailand, February 19, 2011.
387. Lawton MT: Bypass surgery for complex aneurysms. The 14th Association of Southeast Asian Nations (ASEAN) Congress of Neurological Surgery. Phuket, Thailand, February 17, 2011.
388. Lawton MT: Giant intracranial aneurysms: Best current management? Neurosurgery at Jackson Hole. Jackson Hole, WY, March 1, 2011.
389. Lawton MT: Bypass surgery for complex aneurysms. Neurosurgery in the Rockies. Beaver Creek, CO, March 2, 2011.
390. Lawton MT: Surgical management of giant aneurysms in the anterior circulation. Congress of Neurological Surgeons University Webinar. March 10, 2011.
391. Lawton MT: Cavernous malformations: Surgical approaches to supratentorial lesions. American Association of Neurological Surgeons, Annual Meeting. Denver, CO, April 12, 2011.
392. Lawton MT: Controversies in Cerebrovascular and endovascular surgery: Surgery for giant aneurysms. American Association of Neurological Surgeons, Annual Meeting. Denver, CO, April 13, 2011.
393. Lawton MT: Carotid endarterectomy: The case for open surgery. UCSF Neurology Grand Rounds. San Francisco, CA, May 25, 2011.
394. Lawton MT: Evolving perspectives on brain arteriovenous malformations. UCSF Neurosurgery Grand Rounds. San Francisco, CA, May 26, 2011.
395. Lawton MT: Microsurgical splitting of the Sylvian fissure for aneurysm surgery. Neurosurgical Approaches to Cerebral Aneurysms. Valencia, Spain, June 6, 2011.
396. Lawton MT: Microsurgical management of anterior communicating artery aneurysms. Neurosurgical Approaches to Cerebral Aneurysms. Valencia, Spain, June 7, 2011.
397. Lawton MT: Microsurgical management of internal carotid artery aneurysms. Neurosurgical Approaches to Cerebral Aneurysms. Valencia, Spain, June 7, 2011.
398. Lawton MT: Microsurgical management of middle cerebral artery aneurysms. Neurosurgical Approaches to Cerebral Aneurysms. Valencia, Spain, June 8, 2011.

399. Lawton MT: Orbitozygomatic approach. Neurosurgical Approaches to Cerebral Aneurysms. Valencia, Spain, June 8, 2011.
400. Lawton MT: Microsurgical management of basilar artery bifurcation aneurysms. Neurosurgical Approaches to Cerebral Aneurysms. Valencia, Spain, June 8, 2011.
401. Lawton MT: Indocyanine green videoangiography for cerebral aneurysms and arteriovenous malformations. Neurosurgical Approaches to Cerebral Aneurysms. Valencia, Spain, June 9, 2011.
402. Lawton MT: Microsurgical management of embolized aneurysms. Neurosurgical Approaches to Cerebral Aneurysms. Valencia, Spain, June 9, 2011.
403. Lawton MT: Bypass surgery for complex brain aneurysms. Neurosurgical Approaches to Cerebral Aneurysms. Valencia, Spain, June 10, 2011.
404. Lawton MT: Update on brain arteriovenous malformations. Neurosurgery in the Wine Country. Napa, CA, August 6, 2011.
405. Lawton MT: Surgical management of aneurysms, cavernous malformations, and skull base tumors. International Project of Community Neurosurgery, Universidad de Guadalajara. Guadalajara, Mexico, August 18, 2011.
406. Lawton MT: Pterional and orbitozygomatic approaches: Applications to vascular neurosurgery. CNS 3-D Surgical Anatomy Course for Senior Residents. Chicago, IL, August 25, 2011.
407. Lawton MT: Anterior interhemispheric approaches: Applications to vascular neurosurgery. CNS 3-D Surgical Anatomy Course for Senior Residents. Chicago, IL, August 25, 2011.
408. Lawton MT: Transpetrosal approaches: Applications to vascular neurosurgery. CNS 3-D Surgical Anatomy Course for Senior Residents. Chicago, IL, August 27, 2011.
409. Lawton MT: Bypass surgery for complex aneurysms. CNS 3-D Surgical Anatomy Course for Senior Residents. Chicago, IL, August 28, 2011.
410. Lawton MT: Evolving perspectives on brain arteriovenous malformations. University of Texas Southwestern, Neurosurgery Grand Rounds. Dallas, TX, August 31, 2011.
411. Lawton MT: Open aneurysm surgery: Posterior circulation aneurysms. Congress of Neurological Surgeons, Annual Meeting. Washington, DC, October 2, 2011.
412. Lawton MT: Hematology and coagulation for neurosurgeons: Vascular neurosurgery. Congress of Neurological Surgeons, Annual Meeting. Washington, DC, October 3, 2011.
413. Lawton MT: Multidisciplinary management strategies for unruptured aneurysm: Bypass. Congress of Neurological Surgeons, Annual Meeting. Washington, DC, October 4, 2011.
414. Lawton MT: Operative neurosurgery: Three techniques for vascular neurosurgery. Congress of Neurological Surgeons, Annual Meeting. Washington, DC, October 4, 2011.

415. Lawton MT: Avoidance and management of complications of aneurysm surgery: Intraoperative rupture. Congress of Neurological Surgeons, Annual Meeting. Washington, DC, October 5, 2011.
416. Lawton MT: Giant intracranial aneurysms: Evolution of management in a contemporary series. American Academy of Neurological Surgeons, Annual Meeting. Scottsdale, AZ, October 21, 2011.
417. Lawton MT: Pterional and orbitozygomatic approaches for PCoA and MCA aneurysms. Approaches for brain tumor and vascular neurosurgery. New Orleans, LA, November 11, 2011.
418. Lawton MT: Interhemispheric approaches for ACA aneurysms and cavernous malformations. Approaches for brain tumor and vascular neurosurgery. New Orleans, LA, November 11, 2011.
419. Lawton MT: Surgical management of basilar artery aneurysms and retrosigmoid approaches for cavernous malformations. Approaches for brain tumor and vascular neurosurgery. New Orleans, LA, November 12, 2011.
420. Lawton MT: Far lateral approach for PICA aneurysms and bypass surgery. Approaches for brain tumor and vascular neurosurgery. New Orleans, LA, November 12, 2011.
421. Lawton MT: The current state of aneurysm surgery. Neurosurgery Grand Rounds, University of Illinois, College of Medicine – Peoria. Peoria, IL, December 2, 2011.
422. Lawton MT: Evolving perspectives on brain arteriovenous malformations. Neurosurgery Grand Rounds, Thomas Jefferson University. Philadelphia, PA, December 9, 2011.
423. Lawton MT: Evolving perspectives on brain arteriovenous malformations. Neurosurgery Grand Rounds, Cornell University. New York, NY, December 12, 2011.
424. Lawton MT: Bypass surgery for complex aneurysms. Neurosurgery Grand Rounds, University of California, San Francisco. San Francisco, CA, January 5, 2012.
425. Lawton MT: Surgical management of giant intracranial aneurysms. Operative Video Atlas of the American Association of Neurological Surgeons. January 18, 2012.
426. Lawton MT: Evolving perspectives on brain arteriovenous malformations. Neurosurgery Grand Rounds, Stanford University. Palo Alto, CA, January 20, 2012.
427. Lawton MT: Vascular injuries in aneurysm surgery. North American Skull Base Society Annual Meeting. Las Vegas, NV, February 17, 2012.
428. Lawton MT: Current management of middle cerebral artery aneurysms. Neurosurgery at Jackson Hole. Jackson Hole, WY, March 3, 2012.
429. Lawton MT: Intracranial arteriovenous malformations: Innovative use of all the tools – microsurgical, radiosurgical, and endovascular. University of Neurosurgery, Congress of Neurological Surgeons Webinar. April 3, 2012.
430. Lawton MT: Operative nuances for cranial and skull base procedures. American Association of Neurological Surgeons Annual Meeting. Miami, FL, April 14, 2012.

431. Lawton MT: Advanced cerebrovascular and endovascular procedures: Indocyanine green videoangiography and bypass surgery. American Association of Neurological Surgeons Annual Meeting. Miami, FL, April 14, 2012.
432. Lawton MT: Long-term results of Enterprise stent-assisted coiling of cerebral aneurysms (Discussant). American Association of Neurological Surgeons Annual Meeting. Miami, FL, April 14, 2012.
433. Lawton MT: Controversies in cerebrovascular and endovascular neurosurgery: The role of open surgery for basilar apex aneurysms. American Association of Neurological Surgeons Annual Meeting. Miami, FL, April 16, 2012.
434. Lawton MT: Operative nuances for managing complex cranial cases: Giant aneurysms and deep cavernous malformations. American Association of Neurological Surgeons Annual Meeting. Miami, FL, April 17, 2012.
435. Lawton MT: Current controversies in the management of cavernous malformations: Supratentorial approaches. American Association of Neurological Surgeons Annual Meeting. Miami, FL, April 18, 2012.
436. Lawton MT: Surgical management of dural arteriovenous fistulas. Neurosurgery Grand Rounds, University of California, San Francisco. San Francisco, CA, April 26, 2012.
437. Lawton MT: Overview of operative vascular neurosurgery. Stryker Corporate Meeting. San Francisco, CA, April 29, 2012.
438. Lawton MT: Contributions to vascular neurosurgery from the Barrow Neurological Institute. Barrow Neurological Institute Symposium. Phoenix, AZ, May 17, 2012.
439. Lawton MT: The current state of aneurysm surgery. Visiting Professor Lecture, University of North Carolina. Chapel Hill, NC, June 13, 2012.
440. Lawton MT: Surgical approaches to cavernous malformations. XVII Congreso Sociedad de Cirugia Neurologica de Occidente. Puerto Vallarta, Mexico, July 18, 2012.
441. Lawton MT: Surgery for arteriovenous malformations. XVII Congreso Sociedad de Cirugia Neurologica de Occidente. Puerto Vallarta, Mexico, July 19, 2012.
442. Lawton MT: Bypass for aneurysms. XVII Congreso Sociedad de Cirugia Neurologica de Occidente. Puerto Vallarta, Mexico, July 20, 2012.
443. Lawton MT: Magistral Lecture – Seven aneurysms. XVII Congreso Sociedad de Cirugia Neurologica de Occidente. Puerto Vallarta, Mexico, July 20, 2012.
444. Rodriguez-Hernandez A, Lawton MT: Cerebellar arteriovenous malformations: Anatomical subtypes, surgical results, and increased predictive accuracy of the supplementary draining system. XVII Congreso Sociedad de Cirugia Neurologica de Occidente. Puerto Vallarta, Mexico, July 18, 2012.
445. Rodriguez-Hernandez A, Lawton MT: Current management of middle cerebral artery aneurysms: Results with a “clip first” policy. XVII Congreso Sociedad de Cirugia Neurologica de Occidente. Puerto Vallarta, Mexico, July 18, 2012.

446. Rodriguez-Hernandez A, Lawton MT: Distal aneurysms of the intracranial arteries: Application of numerical nomenclature, predilection for cerebellar arteries, and results of surgical management. XVII Congreso Sociedad de Cirugia Neurologica de Occidente. Puerta Vallarta, Mexico, July 18, 2012.
447. Lawton MT: Current management of middle cerebral artery aneurysms. Neurosurgery Update 2012. Sonoma, CA, August 4, 2012.
448. Lawton MT: Anterior interhemispheric approaches: Applications to vascular neurosurgery. CNS 3-D Surgical Anatomy Course for Senior Residents. Houston, TX, August 23, 2012.
449. Lawton MT: Transpetrosal approaches: Applications to vascular neurosurgery. CNS 3-D Surgical Anatomy Course for Senior Residents. Houston, TX, August 24, 2012.
450. Lawton MT: Transtocular approaches: Applications to vascular neurosurgery. CNS 3-D Surgical Anatomy Course for Senior Residents. Houston, TX, August 24, 2012.
451. Lawton MT: Bypass surgery for complex aneurysms. CNS 3-D Surgical Anatomy Course for Senior Residents. Houston, TX, August 25, 2012.
452. Lawton MT: Classification of cerebral AVMs from 1986 to 2012 – What has changed? Brazilian Congress of Neurological Surgeons. Rio de Janeiro, Brazil, September 8, 2012.
453. Lawton MT: Treatment strategies for Spetzler-Martin grade III AVMs. Brazilian Congress of Neurological Surgeons. Rio de Janeiro, Brazil, September 8, 2012.
454. Lawton MT: Neurosurgical management of cavernous malformations in eloquent or deep regions. Brazilian Congress of Neurological Surgeons. Rio de Janeiro, Brazil, September 8, 2012.
455. Lawton MT: Strategies and surgical techniques for arteriovenous malformations. Brazilian Congress of Neurological Surgeons. Rio de Janeiro, Brazil, September 9, 2012.
456. Lawton MT: Surgical management of giant aneurysms. Brazilian Congress of Neurological Surgeons. Rio de Janeiro, Brazil, September 10, 2012.
457. Lawton MT: Clip reconstruction of complex aneurysms: Strategies and tricks. Brazilian Congress of Neurological Surgeons. Rio de Janeiro, Brazil, September 10, 2012.
458. Lawton MT: Indications for surgical management of brain arteriovenous malformations. 1st World AVM Congress. Edinburgh, Scotland, September 18, 2012.
459. Lawton MT: Surgical management of complex dural arteriovenous fistulas. 1st World AVM Congress. Edinburgh, Scotland, September 19, 2012.
460. Lawton MT: Indications, approaches, and outcomes for surgical occlusion of dural arteriovenous fistulas. European Society of Neuroradiology Annual Meeting. Edinburgh, Scotland, September 20, 2012.
461. Lawton MT: Dural arteriovenous fistulas: Complications with case studies. European Society of Neuroradiology Annual Meeting. Edinburgh, Scotland, September 20, 2012.

462. Davies J, Yanamadala V, Rodriguez Hernandez A, Lawton MT: Comparative effectiveness of treatments for cerebral arteriovenous malformations: Trends in US nationwide outcomes from 2000 – 2009. 1st World AVM Congress. Edinburgh, Scotland, September 18, 2012.
463. Davies J, Yanamadala V, Rodriguez Hernandez A, Lawton MT: High-volumes surgeons and hospitals provide superior care at higher value: A volume-outcome analysis for cerebral AVMs. 1st World AVM Congress. Edinburgh, Scotland, September 18, 2012.
464. Yang ST, Rodriguez Hernandez A, Walker EJ, Young WL, Su H, Lawton MT: A reliable experimental mouse model for chronic cerebral venous hypertension. 1st World AVM Congress. Edinburgh, Scotland, September 18, 2012.
465. Gabarros Canals A, Rodriguez Hernandez A, Young WL, Lawton MT: Temporal arteriovenous malformations: Surgical strategy, techniques, and outcomes. 1st World AVM Congress. Edinburgh, Scotland, September 18, 2012.
466. Lawton MT: Preoperative factors and intraoperative techniques to minimize the risk of AVM surgery. Neurosurgical Society of Australasia Annual Scientific Meeting. Gold Coast, Queensland, Australia, October 5, 2012.
467. Lawton MT: Open aneurysm surgery for basilar apex and posterior inferior cerebellar artery aneurysms. Congress of Neurological Surgeons Annual Meeting. Chicago, IL, October 6, 2012.
468. Lawton MT: Surgical management of middle cerebral and basilar apex aneurysms. Congress of Neurological Surgeons Annual Meeting. Chicago, IL, October 8, 2012.
469. Davies J, Yanamadala V, Young WL, Lawton MT: In-hospital morbidity and mortality after treatment of arteriovenous malformations in the United States, 2000 – 2009: The impact of hospital and surgeon volume. Congress of Neurological Surgeons Annual Meeting. Chicago, IL, October 8, 2012.
470. Lawton MT: Indocyanine green videoangiography in vascular neurosurgery. Congress of Neurological Surgeons Annual Meeting. Chicago, IL, October 9, 2012.
471. Lawton MT: Anticoagulants and antiplatelets in vascular and endovascular neurosurgery. Congress of Neurological Surgeons Annual Meeting. Chicago, IL, October 10, 2012.
472. Lawton MT: Current management of middle cerebral artery aneurysms: Results with a “clip first” approach. American Academy of Neurological Surgeons, Annual Meeting. Chatham, MA, October 18, 2012.
473. Lawton MT: Pterional and orbitozygomatic approaches for PCoA and MCA aneurysms. Approaches for brain tumor and vascular neurosurgery. New Orleans, LA, November 2, 2012.
474. Lawton MT: Interhemispheric approaches for ACA aneurysms and cavernous malformations. Approaches for brain tumor and vascular neurosurgery. New Orleans, LA, November 2, 2012.
475. Lawton MT: Surgical management of basilar artery aneurysms and retrosigmoid approaches for cavernous malformations. Approaches for brain tumor and vascular neurosurgery. New Orleans, LA, November 3, 2012.

476. Lawton MT: Far lateral approach for PICA aneurysms and bypass surgery. Approaches for brain tumor and vascular neurosurgery. New Orleans, LA, November 3, 2012.
477. Lawton MT: Goodbye bypass: Arterial reconstruction for complex aneurysms. Geinsinger Annual Cerebrovascular Symposium: Aneurysm, Vascular Malformation, and Ischemia. New York, NY, November 30, 2012.
478. Lawton MT: Technical skills in vascular neurosurgery. AANS Vascular Techniques Course for Residents. Memphis, TN, December 1, 2012.
479. Lawton MT: Arterial reconstruction for complex aneurysms. Helsinki University Central Hospital Grand Rounds. Helsinki, Finland, December 14, 2012.
480. Lawton MT: Pediatric cerebral artery aneurysms. Doctoral dissertation opposition, Helsinki University Central Hospital. Helsinki, Finland, December 14, 2012.
481. Lawton MT: Microsurgery for arteriovenous malformations – Technical pearls. SNIS International Endovascular Stroke Conference/Joint Cerebrovascular Section Annual Meeting. Honolulu, HI, February 3, 2013.
482. Potts M, Jahangiri A, Jen M, Sneed P, McDermott MW, Hetts S, Young WL, Lawton MT: Multimodality treatment of basal ganglia, thalamic, and insular arteriovenous malformations: The UCSF experience. SNIS International Endovascular Stroke Conference/Joint Cerebrovascular Section Annual Meeting. Honolulu, HI, February 4, 2013.
483. Rodriguez Hernandez A, Yang ST, Young WL, Su H, Lawton MT: Adult mouse model of cerebral venous hypertension with common carotid artery-to-external jugular vein anastomosis. SNIS International Endovascular Stroke Conference/Joint Cerebrovascular Section Annual Meeting. Honolulu, HI, February 4, 2013.
484. Lawton MT: Bypass surgery for complex aneurysms. Texas Association of Neurological Surgeons Annual Meeting. Horseshoe Bay, TX, March 1, 2013.
485. Lawton MT: Surgical management of brain arteriovenous malformations. Texas Association of Neurological Surgeons Annual Meeting. Horseshoe Bay, TX, March 2, 2013.
486. Lawton MT: The vascular manifesto. Neurosurgery at Jackson Hole. Jackson, WY, March 4, 2013.
487. Lawton MT: Vascular reconstruction in cerebrovascular surgery. Japanese Society of Surgery for Cerebral Stroke, 42nd Annual Meeting. Tokyo, Japan, March 22, 2013.
488. Lawton MT: Surgical management of arteriovenous malformations. Japanese Society of Surgery for Cerebral Stroke, 42nd Annual Meeting. Tokyo, Japan, March 23, 2013.
489. Lawton MT: Controversies in cerebrovascular` neurosurgery: Supratentorial cavernous malformations. American Association of Neurological Surgeons Annual Meeting. New Orleans, LA, April 28, 2013.
490. Lawton MT: Controversies in cerebrovascular and endovascular neurosurgery: Arteriovenous malformations. American Association of Neurological Surgeons Annual Meeting. New Orleans, LA, April 29, 2013.

491. Lawton MT: Hunt-Wilson Lecture: The vascular manifesto. American Association of Neurological Surgeons Annual Meeting. New Orleans, LA, April 29, 2013.
492. Lawton MT: Nuances of cerebrovascular surgery. American Association of Neurological Surgeons Annual Meeting. New Orleans, LA, April 29, 2013.
493. Lawton MT: Non-invasive urinary biomarkers can detect the presence of intracranial arteriovenous malformations (Discussant). American Association of Neurological Surgeons Annual Meeting. New Orleans, LA, April 30, 2013.
494. Potts M, Young WL, Lawton MT: Surgical management of deep arteriovenous malformations in the insula, basal ganglia, and thalamus. American Association of Neurological Surgeons Annual Meeting. New Orleans, LA, April 30, 2013.
495. Lawton MT: The vascular manifesto. 39th Annual Barrow Neurological Institute Neurosurgery Symposium. Phoenix, AZ, May 16, 2013.
496. Lawton MT: The vascular manifesto. Neurosurgery Grand Rounds, University of Wisconsin. Madison, WI, May 17, 2013.
497. Lawton MT: Bypass surgery for complex aneurysms. Neurosurgery Departmental Conference, University of Wisconsin. Madison, WI, May 18, 2013.
498. Lawton MT: Arterial and Venous Anatomy. Society of Neurological Surgery Junior Resident Course: Introduction to the Operating Room. University of California, San Diego. San Diego, CA, May 31, 2013.
499. Lawton MT: Surgical management of brain arteriovenous malformations. Cedars-Sinai Hospital Distinguished Lecture Series. Los Angeles, CA, June 13, 2013.
500. Lawton MT: The current state of aneurysm surgery. Neurosurgery Grand Rounds, Cedars-Sinai Hospital. Los Angeles, CA, June 14, 2013.
501. Lawton MT: The current state of aneurysm surgery. Grand Rounds, St. Francis Memorial Hospital. San Francisco, CA, June 25, 2013.
502. Lawton MT: Surgical treatment of giant aneurysms. Mexican Congress of Neurological Surgeons. Ixtapa, Mexico, July 15, 2013.
503. Lawton MT: Surgical tricks for anterior circulation aneurysms. Mexican Congress of Neurological Surgeons. Ixtapa, Mexico, July 15, 2013.
504. Lawton MT: Surgical treatment of posterior circulation aneurysms. Mexican Congress of Neurological Surgeons. Ixtapa, Mexico, July 16, 2013.
505. Lawton MT: Expert roundtable: Aneurysm case presentations. Society of Neuro Interventional Surgery, 10th Annual Meeting. Miami, FL, July 29, 2013.
506. Lawton MT: Brain arteriovenous malformation resection: Patient selection and microsurgical technique. Neurosurgery Update 2013. Napa, CA, August 3, 2013.

507. Lawton MT: Arterial anatomy. CNS 3D Surgical Anatomy Course for Senior Residents, Baylor College of Medicine. Houston, TX, August 22, 2013.
508. Lawton MT: Venous anatomy. CNS 3D Surgical Anatomy Course for Senior Residents, Baylor College of Medicine. Houston, TX, August 22, 2013.
509. Lawton MT: Surgical management of deep cavernous malformations. CNS 3D Surgical Anatomy Course for Senior Residents, Baylor College of Medicine. Houston, TX, August 22, 2013.
510. Lawton MT: Surgical management of basilar apex aneurysms. CNS 3D Surgical Anatomy Course for Senior Residents, Baylor College of Medicine. Houston, TX, August 23, 2013.
511. Lawton MT: Bypass techniques for complex aneurysms. CNS 3D Surgical Anatomy Course for Senior Residents, Baylor College of Medicine. Houston, TX, August 24, 2013.
512. Lawton MT: The Vascular Manifesto. UCSF Neurosurgery Grand Rounds. San Francisco, CA, August 29, 2013.
513. Lawton MT: Surgical management of dural arteriovenous malformations. UCSF Neurointerventional Symposium. San Francisco, CA, September 6, 2013.
514. Lawton MT: Bypass for complex aneurysms. UCSF Neurointerventional Symposium. San Francisco, CA, September 6, 2013.
515. Lawton MT: The current state of aneurysm surgery. UCSF Stroke and Aneurysm Update. San Francisco, CA, September 7, 2013.
516. Lawton MT: 3D video demonstration of cerebrovascular surgical techniques. 15th World Federation of Neurological Surgery World Congress. Seoul, Korea, September 10, 2013.
517. Lawton MT: Surgical management of deep arteriovenous malformations. Western Neurosurgical Society Annual Meeting. Half Moon Bay, CA, September 16, 2013.
518. Lawton MT: Deep arteriovenous malformations in the basal ganglia, thalamus, and insula: Microsurgical management, techniques, and results. American Academy of Neurological Surgery, Annual Meeting. Newport Beach, CA, September 27, 2013.
519. Lawton MT: Open aneurysm surgery: Management of basilar apex aneurysms. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 19, 2013.
520. Lawton MT: Stroke 2014: Bypass for complex intracranial aneurysms. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 20, 2013.
521. Lawton MT: Zeiss Symposium: Making sense of AVM surgery. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 21, 2013.
522. Lawton MT: Multimodality management of intracranial arteriovenous malformations (Moderator). Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 22, 2013.

523. Lawton MT: Intraoperative complication avoidance and management. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 22, 2013.
524. Lawton MT: Avoidance and management of complications of aneurysm surgery: Posterior communicating, anterior communicating, and middle cerebral artery aneurysms. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 23, 2013.
525. Lawton MT: Bypass techniques for complex aneurysms. AANS Endovascular and Vascular Techniques for Residents Course. Memphis TN, November 9, 2013.
526. Lawton MT: Seven AVMs: Making sense of arteriovenous malformation surgery. Grand Rounds, Barrow Neurological Institute. Phoenix, AZ, November 22, 2013.
527. Lawton MT: Pterional and orbitozygomatic approaches for aneurysms. Approaches for brain tumors and vascular neurosurgery. San Francisco, CA, December 13, 2013.
528. Lawton MT: Interhemispheric approaches for anterior cerebral artery aneurysms and cavernous malformations. Approaches for brain tumors and vascular neurosurgery. San Francisco, CA, December 13, 2013.
529. Lawton MT: Surgical management of basilar artery aneurysms and retrosigmoid approaches for cavernous malformations. Approaches for brain tumors and vascular neurosurgery. San Francisco, CA, December 14, 2013.
530. Lawton MT: Far lateral approach for PICA aneurysms and bypass surgery. Approaches for brain tumors and vascular neurosurgery. San Francisco, CA, December 14, 2013.
531. Lawton MT: Bypass surgery for complex aneurysms. Visiting Professor Lecture, Rush University. Chicago, IL, January 23, 2014.
532. Lawton MT: Evolving specialty of vascular neurosurgery. Philippines General Hospital Symposium. Manila, Philippines, February 3, 2014.
533. Lawton MT: Arterial anatomy. Philippines General Hospital Symposium. Manila, Philippines, February 3, 2014.
534. Lawton MT: Surgical management of brain aneurysms. Philippines General Hospital Symposium. Manila, Philippines, February 3, 2014.
535. Lawton MT: Surgical management and patient selection of brain arteriovenous malformations. Philippines General Hospital Symposium. Manila, Philippines, February 3, 2014.
536. Lawton MT: Intraoperative complications in aneurysm surgery. Academy of Filipino Neurosurgeons. Manilla, Philippines, February 5, 2014.
537. Lawton MT: In memorium – William Young. AANS/CNS Joint Cerebrovascular Section Annual Meeting. San Diego, CA, February 10, 2014.
538. Lawton MT: Tribute to William Young. International Stroke Conference. San Diego, CA, February 12, 2014.

539. Lawton MT: Early resection of ruptured AVMs: Patient selection and surgical technique. International Stroke Conference. San Diego, CA, February 12, 2014.
540. Lawton MT: Surgery for unruptured arteriovenous malformations: A response to the ARUBA trial. Neurosurgery at Jackson Hole. Jackson, WY, March 3, 2014.
541. Lawton MT: How to tackle difficult cranial cases: Posterior circulation aneurysms (3D video cases). American Association of Neurological Surgeons Annual Meeting. San Francisco, CA, April 6, 2014.
542. Lawton MT: Seven AVMs: Making sense of AVM surgery. American Association of Neurological Surgeons Annual Meeting. San Francisco, CA, April 6, 2014.
543. Lawton MT: Current controversies in the management of cavernous malformations: Supratentorial lesions. American Association of Neurological Surgeons Annual Meeting. San Francisco, CA, April 8, 2014.
544. Lawton MT: ICG videoangiography in vascular neurosurgery. American Association of Neurological Surgeons Annual Meeting. San Francisco, CA, April 8, 2014.
545. Lawton MT: Neurosurgical face-off: Invasive treatment vs. medical management of arteriovenous malformations. American Association of Neurological Surgeons Annual Meeting. San Francisco, CA, April 8, 2014.
546. Lawton MT: Operative nuances: Complication avoidance in aneurysm surgery. American Association of Neurological Surgeons Annual Meeting. San Francisco, CA, April 8, 2014.
547. Lawton MT: Controversies in cerebrovascular and endovascular neurosurgery. American Association of Neurological Surgeons Annual Meeting. San Francisco, CA, April 9, 2014.
548. Lawton MT: Disclosing neurosurgical errors and risk management. Society of Neurological Surgery Resident Training Course. San Diego, CA, April 26, 2014.
549. Lawton MT: Humanitarianism and neurosurgery at UCSF and beyond. Neurosurgery Grand Rounds. San Francisco, CA, May 8, 2014.
550. Lawton MT: Surgical management of brain arteriovenous malformations: Current status and techniques. German Society of Neurological Surgeons and Turkish Society of Neurological Surgery Joint Meeting. Dresden, Germany, May 13, 2014.
551. Lawton MT: The Vascular Manifesto and philosophy of teaching in neurosurgery. Neurosurgery Grand Rounds, Laval University. Quebec, Canada, May 16, 2014.
552. Lawton MT: Seven AVMs: Surgical management of brain arteriovenous malformations. Jean Sirois Lecture, Laval University. Quebec, Canada, May 16, 2014.
553. Lawton MT: The Vascular Manifesto. Elizabeth C. Crosby Lecture, University of Michigan. Ann Arbor, MI, May 23, 2014.
554. Lawton MT: Pathogenesis and biology of brain arteriovenous malformations. Second World AVM Congress. Nancy, France, June 18, 2014.

555. Lawton MT: Surgical management of brain arteriovenous malformations. Second World AVM Congress. Nancy, France, June 19, 2014.
556. Lawton MT: Surgical anatomy and techniques for basilar apex aneurysms. 18th Congress of the Society of Neurological Surgery of the West. Puerto Vallarta, Mexico, July 17, 2014.
557. Lawton MT: Surgical anatomy and techniques for AVM resection. 18th Congress of the Society of Neurological Surgery of the West. Puerto Vallarta, Mexico, July 18, 2014.
558. Lawton MT: Brainstem cavernous malformations: Surgical management and a proposed grading system. Neurosurgery Update in the Wine Country. Napa, CA, August 9, 2014.
559. Lawton MT: Arterial Anatomy. CNS 3D Surgical Anatomy Course for Senior Residents. San Francisco, CA, August 23, 2014.
560. Lawton MT: Surgical anatomy of basilar artery aneurysms. CNS 3D Surgical Anatomy Course for Senior Residents. San Francisco, CA, August 24, 2014.
561. Lawton MT: Surgical anatomy of paraclinoidal aneurysms. CNS 3D Surgical Anatomy Course for Senior Residents. San Francisco, CA, August 25, 2014.
562. Lawton MT: Surgical management of brainstem cavernous malformations. CNS 3D Surgical Anatomy Course for Senior Residents. San Francisco, CA, August 25, 2014.
563. Lawton MT: Bypass surgery for complex aneurysms. CNS 3D Surgical Anatomy Course for Senior Residents. San Francisco, CA, August 26, 2014.
564. Lawton MT: Surgical management of arteriovenous malformations. Stroke and Aneurysm Update, 2014. San Francisco, CA, September 6, 2014.
565. Lawton MT: Extreme lateral approach to aneurysms of the posterior circulation. Brazilian Congress of Neurosurgery, 30th Annual Meeting. Curitiba, Brazil, September 13, 2014.
566. Lawton MT: Microsurgical management of residual and recurrent aneurysms after coiling. Brazilian Congress of Neurosurgery, 30th Annual Meeting. Curitiba, Brazil, September 13, 2014.
567. Lawton MT: Intracranial-intracranial bypass for the neurosurgical treatment of complex aneurysms. Brazilian Congress of Neurosurgery, 30th Annual Meeting. Curitiba, Brazil, September 13, 2014.
568. Lawton MT: Supplementary classification for patient selection with brain arteriovenous malformations. Brazilian Congress of Neurosurgery, 30th Annual Meeting. Curitiba, Brazil, September 14, 2014.
569. Lawton MT: Neurosurgical management of arteriovenous malformations: Personal experience. Brazilian Congress of Neurosurgery, 30th Annual Meeting. Curitiba, Brazil, September 14, 2014.
570. Lawton MT: Neurosurgical treatment of supratentorial cavernous malformation in eloquent or deep areas. Brazilian Congress of Neurosurgery, 30th Annual Meeting. Curitiba, Brazil, September 14, 2014.

571. Lawton MT: Surgical management of basilar apex aneurysms. Brazilian Congress of Neurosurgery, 30th Annual Meeting. Curitiba, Brazil, September 15, 2014.
572. Lawton MT: Clipping techniques for giant and complex aneurysms. Brazilian Congress of Neurosurgery, 30th Annual Meeting. Curitiba, Brazil, September 15, 2014.
573. Lawton MT: Bypass techniques for giant and complex aneurysms. Brazilian Congress of Neurosurgery, 30th Annual Meeting. Curitiba, Brazil, September 15, 2014.
574. Lawton MT: Surgical management of low-grade arteriovenous malformations. Brazilian Congress of Neurosurgery, 30th Annual Meeting. Curitiba, Brazil, September 16, 2014.
575. Lawton MT: Bypass techniques for giant and complex aneurysms. Brazilian Congress of Neurosurgery, 30th Annual Meeting. Curitiba, Brazil, September 16, 2014.
576. Lawton MT: Sentinel AVM hemorrhage: Recognizing “unruptured” surgical AVMs. American Academy of Neurological Surgery, Annual Meeting. Santa Rosa Beach, FL, September 18, 2014.
577. Lawton MT: Surgical management of giant and complex aneurysms. 7th Jornadas de Patologia Neurovascular, SENEC Barcelona. Barcelona, Spain, October 2, 2014.
578. Lawton MT: Anatomical classification and surgical management of brain arteriovenous malformations. 7th Jornadas de Patologia Neurovascular, SENEC Barcelona. Barcelona, Spain, October 3, 2014.
579. Lawton MT: Cutting-edge and future technology in ischemic and hemorrhagic stroke: Surgical management of AVMs. Congress of Neurological Surgeons Annual Meeting. Boston, MA, October 18, 2014.
580. Lawton MT: Open aneurysm surgery: 3D practical course. Congress of Neurological Surgeons Annual Meeting. Boston, MA, October 18, 2014.
581. Lawton MT: Emerging technologies and their role in the clip versus coil debate: A “clip first” approach. Congress of Neurological Surgeons Annual Meeting. Boston, MA, October 18, 2014.
582. Lawton MT: 3D Neurosurgery: Techniques to advance safety and efficacy in microneurosurgery. Congress of Neurological Surgeons Annual Meeting. Boston, MA, October 20, 2014.
583. Lawton MT: Surgical management of aneurysm remnants. Congress of Neurological Surgeons Annual Meeting. Boston, MA, October 21, 2014.
584. Lawton MT: 2D Neurosurgery: Intraoperative complication avoidance and management. Congress of Neurological Surgeons Annual Meeting. Boston, MA, October 21, 2014.
585. Lawton MT: Management of unruptured intracranial aneurysms: Bypass for complex aneurysms. Congress of Neurological Surgeons Annual Meeting. Boston, MA, October 22, 2014.
586. Lawton MT: Anterior clinoidectomy and the surgical management of paraclinoid aneurysms. Approaches for Brain Tumors and Vascular Neurosurgery. Tampa, FL, November 14, 2014.

587. Lawton MT: Far lateral approach and the surgical management of posterior circulation aneurysms. Approaches for Brain Tumors and Vascular Neurosurgery. Tampa, FL, November 14, 2014.
588. Lawton MT: Bypass surgery for complex aneurysms. AANS/NREF Endovascular and Vascular Techniques Course. Memphis, TN, November 15, 2014.
589. Lawton MT: Seven AVMs: Making sense of AVM surgery. AANS/NREF Endovascular and Vascular Techniques Course. Memphis, TN, November 15, 2014.
590. Lawton MT: ARUBA demonstrates the unruptured AVMs should undergo surgical resection. AANS/CNS Joint Cerebrovascular Section Meeting. Nashville, TN, February 10, 2015.
591. Lawton MT: Case-based debates in cerebrovascular surgery. AANS/CNS Joint Cerebrovascular Section Meeting. Nashville, TN, February 10, 2015.
592. Lawton MT: The dolichoectatic basilar trunk aneurysm. Neurosurgery in Jackson Hole. Jackson, WY, March 1, 2015.
593. Lawton MT: Surgical management of brain arteriovenous malformations. Japanese Society of Neuroradiology, 44th Annual Meeting. Nagoya, Japan, March 6, 2015.
594. Lawton MT: Bypass surgery for complex brain aneurysms. Japanese Society of Neuroradiology, 44th Annual Meeting. Nagoya, Japan, March 6, 2015.
595. Lawton MT: Surgical management of brainstem cavernous malformations. Japanese Society of Neuroradiology, 44th Annual Meeting. Nagoya, Japan, March 6, 2015.
596. Lawton MT: Surgical management of giant aneurysms. Japanese Society of Neuroradiology, 44th Annual Meeting. Nagoya, Japan, March 6, 2015.
597. Lawton MT: Surgical techniques for giant intracranial aneurysms. Neurosurgery Grands Rounds, Louisiana State University Health. New Orleans, LA, March 27, 2015.
598. Lawton MT: Intracranial cavernous malformations: Natural history, genetics, management, and future directions in research. American Academy of Neurology Annual Meeting. Washington, DC, April 18, 2015.
599. Lawton MT: Seven Aneurysms: The current state of aneurysm surgery. Neurosurgery Grand Rounds, Washington University. St. Louis, MO, April 22, 2015.
600. Lawton MT: How I tackle difficult cranial cases: A step-by-step 3D presentation of aneurysm cases. American Association of Neurological Surgery Annual Meeting. Washington, DC, May 2, 2015.
601. Lawton MT: Contralateral approaches for minimally invasive cerebrovascular surgery. American Association of Neurological Surgery Annual Meeting. Washington, DC, May 4, 2015.
602. Lawton MT: Controversies in cerebrovascular and endovascular surgery. American Association of Neurological Surgery Annual Meeting. Washington, DC, May 4, 2015.

603. Lawton MT: Impact of intraoperative fluorocein on surgical treatment of complex vascular and neoplastic lesions. American Association of Neurological Surgery Annual Meeting. Washington, DC, May 4, 2015.
604. Michalak SM, Rolston J, Lawton MT: Prospective, multidisciplinary recording of perioperative errors in cerebrovascular surgery: Is error in the eye of the beholder? American Association of Neurological Surgery Annual Meeting. Washington, DC, May 4, 2015.
605. Lawton M: Operative nuances: Complication avoidance (3D video presentation). American Association of Neurological Surgery Annual Meeting. Washington, DC, May 5, 2015.
606. Lawton MT: Cavernous malformations: Current controversies in management. American Association of Neurological Surgery Annual Meeting. Washington, DC, May 6, 2015.
607. Lawton MT: Technical mastery in cerebrovascular neurosurgery: Shortening the learning curve. American Association of Neurological Surgery Annual Meeting. Washington, DC, May 6, 2015.
608. Zygourakis CC, Lawton MT: Clinical utility and cost-effectiveness of routine postoperative head CTs in elective aneurysm clipping. American Association of Neurological Surgery Annual Meeting. Washington, DC, May 6, 2015.
609. Lawton MT: Seven bypasses: Tenets and techniques for revascularization. Congreso Nacional Neurocirugia, Sociedad Espanola de Neurocirugia (SENEC). Pamplona, Spain, May 21, 2015.
610. Lawton MT: Surgical management of brain AVMs. Congreso Nacional Neurocirugia, Sociedad Espanola de Neurocirugia (SENEC). Pamplona, Spain, May 21, 2015.
611. Lawton MT: Seven AVMs: Making sense of AVM surgery. Helsinki Live Surgery Course. Helsinki, Finland, May 31, 2015.
612. Lawton MT: Skill development, surgical anatomy, and clinical neurosurgical resesearch. Community Neurosurgery. Puerta Vallarta, Mexico, July 30, 2015.
613. Lawton MT: An update on bypass surgery. Neurosurgery in the Wine Country. Napa, CA, August 8, 2015.
614. Lawton MT: Arterial anatomy of the brain. CNS 3-D Surgical Anatomy Course for Senior Residents. Houston, TX, August 20, 2015.
615. Lawton MT: Posterior inferior cerebellar artery aneurysms. CNS 3-D Surgical Anatomy Course for Senior Residents. Houston, TX, August 21, 2015.
616. Lawton MT: Technical mastery: Shortening the learning curve. CNS 3-D Surgical Anatomy Course for Senior Residents. Houston, TX, August 21, 2015.
617. Lawton MT: Basilar artery aneurysms. CNS 3-D Surgical Anatomy Course for Senior Residents. Houston, TX, August 22, 2015.
618. Lawton MT: Seven bypasses: Tenets and techniques for revascularization. CNS 3-D Surgical Anatomy Course for Senior Residents. Houston, TX, August 23, 2015.

619. Lawton MT: Seven aneurysms: The current state of aneurysm surgery. Swedish Neurosciences Grand Rounds, Swedish Neuroscience Institute. Seattle, WA, September 3, 2015.
620. Lawton MT: Surgery for complex cerebral aneurysms. Neurointerventional Tutorial. San Francisco, CA, September 11, 2015.
621. Lawton MT: Surgical management of dural arteriovenous fistulas. Neurointerventional Tutorial. San Francisco, CA, September 11, 2015.
622. Lawton MT: Current state of arteriovenous malformation surgery. UCSF Stroke and Aneurysm Update. San Francisco, CA, September 12, 2015.
623. Lawton MT: The pathogenesis of brain arteriovenous malformations. European Society of Neuroradiology Annual Meeting. Naples, Italy, September 17, 2015.
624. Lawton MT: Surgical management of complex brain aneurysms. European Society of Neuroradiology Annual Meeting. Naples, Italy, September 18, 2015.
625. Lawton MT: Open aneurysm surgery. Congress of Neurological Surgeons Annual Meeting. New Orleans, LA, September 26, 2015.
626. Lawton MT: Surgical for brain arteriovenous Malformations. Congress of Neurological Surgeons Annual Meeting. New Orleans, LA, September 26, 2015.
627. Lawton MT: Open aneurysm surgery. Congress of Neurological Surgeons Annual Meeting. New Orleans, LA, September 26, 2015.
628. Zygourakis CC, Valencia V, Moriates C, Catschegn S, Afshar A, Bozic K, Soo Hoo K, Goldberg A, Boscardin C, Gonzalez R, Pitts LH, Lawton MT: OR score: Reducing operating room costs through a hospital-wide transparency initiative. Congress of Neurological Surgeons Annual Meeting. New Orleans, LA, September 27, 2015.
629. Lawton MT: Techniques to advance the safety and efficacy of microneurosurgery. Congress of Neurological Surgeons Annual Meeting. New Orleans, LA, September 28, 2015.
630. Lawton MT: Managing neurovascular emergencies. Congress of Neurological Surgeons Annual Meeting. New Orleans, LA, September 29, 2015.
631. Lawton MT: Fluorescence guided neurosurgery. Congress of Neurological Surgeons Annual Meeting. New Orleans, LA, September 29, 2015.
632. Lawton MT: Aneurysm clipping techniques and strategies for complication avoidance. Congress of Neurological Surgeons Annual Meeting. New Orleans, LA, September 30, 2015.
633. Lawton MT: Intracranial-intracranial bypass for PICA aneurysms: Options, techniques, and results in 35 patients. Joint Meeting of German Society of Neurosurgery, German Academy of Neurological Surgeons, and the American Academy of Neurological Surgery. Heidelberg, Germany, October 9, 2015.
634. Etminan N, Halberkann M, Buchholz BA, Drier R, Matzenauer C, Beseoglu K, Lawton MT, Steiger HJ, Hanggi D, Cooke D, Macdonald RL: Radiocarbon birth dating to unravel the developmental

- chronology of the physiological and pathological cerebrovasculature. Joint Meeting of German Society of Neurosurgery, German Academy of Neurological Surgeons, and the American Academy of Neurological Surgery. Heidelberg, Germany, October 10, 2015.
635. Lawton MT: Seminar on brain arteriovenous malformations. European Association of Neurological Surgeons. Madrid, Spain, October 20, 2015.
 636. Lawton MT: Surgical management of brain arteriovenous malformations. European Association of Neurological Surgeons. Madrid, Spain, October 20, 2015.
 637. Lawton MT: The once and future art of vascular neurosurgery. Thesis Defense by Ana Rodriguez Hernandez, University of Valladolid. Valladolid, Spain, October 21, 2015.
 638. Lawton MT: Salvage surgery for complex aneurysms treated endovascularly. Aneurysms Inside & Out, Swedish Neuroscience Institute. Seattle, WA, October 23, 2015.
 639. Lawton MT: Clipping nuances in aneurysm management. Aneurysms Inside & Out, Swedish Neuroscience Institute. Seattle, WA, October 23, 2015.
 640. Lawton MT: Surgery for brain arteriovenous malformations. AANS/NREF Endovascular and Vascular Techniques Course for Senior Residents. Memphis, TN, November 7, 2015.
 641. Lawton MT: Surgical technique for intracranial bypass. AANS/NREF Endovascular and Vascular Techniques Course for Senior Residents. Memphis, TN, November 7, 2015.
 642. Lawton MT: Surgical management of complex aneurysms. Huashan-Tiantan Internal Conference on Microsurgery and Endovascular Therapy for Cerebrovascular Disease. Shanghai, China, December 4, 2015.
 643. Lawton MT: Fluorescence guided vascular neurosurgery. Huashan-Tiantan Internal Conference on Microsurgery and Endovascular Therapy for Cerebrovascular Disease. Shanghai, China, December 4, 2015.
 644. Lawton MT: Surgical management of brain arteriovenous malformations. Huashan-Tiantan Internal Conference on Microsurgery and Endovascular Therapy for Cerebrovascular Disease. Shanghai, China, December 5, 2015.
 645. Lawton MT: Seven AVMs: Surgical management of brain arteriovenous malformations. Neurosurgery Grand Rounds. Baltimore, MD, December 10, 2015.
 646. Lawton MT: Aneurysms I cross-over to endovascular treatment. AANS/CNS Joint Cerebrovascular Section Annual Meeting. Los Angeles, CA, February 15, 2016.
 647. Lawton MT: Keyholes approaches to cerebral aneurysms. AANS/CNS Joint Cerebrovascular Section Annual Meeting. Los Angeles, CA, February 16, 2016.
 648. Lawton MT: Pushing the bypass envelope. Neurosurgery at Jackson Hole. Jackson Hole, WY, February 29, 2016.
 649. Lawton MT, Englot D: Mapping and seizure freedom in vascular neurosurgery. First International Brain Mapping Course. Chicago, IL, April 28, 2016.

650. Lawton MT: How to tackle difficult cranial cases: A step-by-step 3D case-based presentation (Aneurysms and bypasses). American Association of Neurological Surgery Annual Meeting. Chicago, IL, May 1, 2016.
651. Tayebi Meybodi A, Benet A, Lawton MT: Location-based algorithmic approach for surgical treatment of complex middle cerebral artery aneurysms. American Association of Neurological Surgery Annual Meeting. Chicago, IL, May 2, 2016.
652. Lawton MT: Current controversies in the management of cavernous malformations (supratentorial lesions). American Association of Neurological Surgery Annual Meeting. Chicago, IL, May 2, 2016.
653. Lawton MT: Fluorescence-guided neurosurgery. American Association of Neurological Surgery Annual Meeting. Chicago, IL, May 2, 2016.
654. Lawton MT: Controversies in cerebrovascular and endovascular neurosurgery. American Association of Neurological Surgery Annual Meeting. Chicago, IL, May 3, 2016.
655. Lawton MT: Operative nuances and complication avoidance in cerebrovascular surgery. American Association of Neurological Surgery Annual Meeting. Chicago, IL, May 3, 2016.
656. Lawton MT: Anterior circulation vascular and skull base anatomy. Brain Tumor and Vascular Neurosurgery. Mahwah, NJ, June 3, 2016.
657. Lawton MT: Posterior circulation vascular and skull base anatomy. Brain Tumor and Vascular Neurosurgery. Mahwah, NJ, June 3, 2016.
658. Lawton MT: Brain stem and cranial nerve anatomy. Brain Tumor and Vascular Neurosurgery. Mahwah, NJ, June 4, 2016.
659. Lawton MT: Seven AVMs: Making sense of AVM surgery. Helsinki Live Surgery Course. Helsinki, Finland, June 5, 2016.
660. Lawton MT: Anterior circulation aneurysms. Far East Neurosurgery Sapporo Live Microsurgery Course in Cerebrovascular and Skull Base Surgery. Sapporo, Japan, July 27, 2016.
661. Lawton MT: Surgery for brain arteriovenous malformations. Far East Neurosurgery Sapporo Live Microsurgery Course in Cerebrovascular and Skull Base Surgery. Sapporo, Japan, July 28, 2016.
662. Lawton MT: Posterior circulation aneurysms. Far East Neurosurgery Sapporo Live Microsurgery Course in Cerebrovascular and Skull Base Surgery. Sapporo, Japan, July 29, 2016.
663. Lawton MT: An update on aneurysm surgery. Neurosurgery Update. Napa, California, August 13, 2016.
664. Lawton MT: Arterial anatomy. CNS 3D Anatomy Course for Senior Residents. Houston, TX, August 18, 2016.
665. Lawton MT: Posterior inferior cerebellar artery aneurysms. CNS 3D Anatomy Course for Senior Residents. Houston, TX, August 19, 2016.

666. Lawton MT: Shortening the learning curve in neurosurgery. CNS 3D Anatomy Course for Senior Residents. Houston, TX, August 19, 2016.
667. Lawton MT: Basilar artery apex aneurysms. CNS 3D Anatomy Course for Senior Residents. Houston, TX, August 20, 2016.
668. Lawton MT: Seven bypasses: Tenets and techniques for revascularization. CNS 3D Anatomy Course for Senior Residents. Houston, TX, August 21, 2016.
669. Lawton MT: Point-Counterpoint: Overlapping surgery - Safe and invaluable. American Academy of Neurological Surgery Annual Meeting. Jackson Hole, WY, September 15, 2016.
670. Lawton MT: Brain aneurysms and their treatment. Brain Aneurysm Awareness Symposium. San Francisco, CA, September 19, 2016.
671. Lawton MT: Seven aneurysms: Current state of aneurysm surgery. Holan Lecture, Cleveland Clinic. Cleveland, OH, September 22, 2016.
672. Lawton MT: Surgery for brain arteriovenous malformations. 8th Annual Practical Management of Acute Stroke Symposium. Cleveland, OH, September 23, 2016.
673. Lawton MT: Neurovascular update: Evidence-based guidelines in ischemic and hemorrhagic stroke for practicing neurosurgeons: Brain AVMs. Congress of Neurological Surgeons Annual Meeting. San Diego, CA, September 24, 2016.
674. Lawton MT: Advanced cerebrovascular surgery: Operative video-based surgical and anatomical pearls in bypass surgery. Congress of Neurological Surgeons Annual Meeting. San Diego, CA, September 25, 2016.
675. Lawton MT: Surgical neuroanatomy I: Supratentorial (Arteries). Congress of Neurological Surgeons Annual Meeting. San Diego, CA, September 25, 2016.
676. Lawton MT: Surgical neuroanatomy II: Infratentorial (Basilar apex aneurysms). Congress of Neurological Surgeons Annual Meeting. San Diego, CA, September 25, 2016.
677. Lawton MT: Fluorescence-guided neurosurgery. Congress of Neurological Surgeons Annual Meeting. San Diego, CA, September 26, 2016.
678. Lawton MT: Seven aneurysms. Congress of Neurological Surgeons Annual Meeting. San Diego, CA, September 27, 2016.
679. Lawton MT: Cerebral revascularization. International Congress of Neurosciences, Hospital Juarez de Mexico. Mexico City, Mexico, October 10, 2016.
680. Lawton MT: Clipping techniques for complex aneurysms. International Congress of Neurosciences, Hospital Juarez de Mexico. Mexico City, Mexico, October 10, 2016.
681. Lawton MT: Surgical techniques for brain arteriovenous malformations. AANS Endovascular and Vascular Techniques Course for Senior Residents. Memphis, TN, October 22, 2016.

682. Lawton MT: Surgical management of brain arteriovenous malformations. 3rd World AVM Congress. Napa, CA, October 25, 2016.
683. Lawton MT: Future directions in the management of brain arteriovenous malformations. 3rd World AVM Congress. Napa, CA, October 26, 2016.
684. Zhu W, Zhu D, Chen W, Chen B, Zhang R, Zhan L, Zhang M, Winkler E, Lawton MT: Thalidomide and lenalidomide treatment stabilizes the vascular wall and reduces microhemorrhage in mouse brain AVM. 3rd World AVM Congress. Napa, CA, October 25, 2016.
685. Luo M, Li Q, Ma L, Zhang R, Zhan L, Lawton MT, Su H: ALK1 deficiency in bone marrow-derived endothelial cells leads to arteriovenous malformation. 3rd World AVM Congress. Napa, CA, October 25, 2016.
686. Chen X, Cooke D, Saloner D, Nelson J, Su H, Lawton MT, Hess C, Tihan T, Zhao Y, Kim H: Higher flow is present in unruptured AVMs with silent hemorrhage. 3rd World AVM Congress. Napa, CA, October 25, 2016.
687. Lawton MT: Surgical treatment of cavernous malformations. Angioma Alliance Scientific Meeting. Washington, DC, November 10, 2016.
688. Lawton MT: Management of brainstem cavernous malformations. 7th Meeting of Young Neurosurgeons from State of Sao Paulo and 4th Brazilian Congress of Neurosurgical Approaches. Sao Paulo, Brazil, November 18, 2016.
689. Lawton MT: Defining excellence: Bypass techniques. 7th Meeting of Young Neurosurgeons from State of Sao Paulo and 4th Brazilian Congress of Neurosurgical Approaches. Sao Paulo, Brazil, November 18, 2016.
690. Lawton MT: Management of anterior circulation aneurysms. 7th Meeting of Young Neurosurgeons from State of Sao Paulo and 4th Brazilian Congress of Neurosurgical Approaches. Sao Paulo, Brazil, November 18, 2016.
691. Lawton MT: Management of basilar aneurysms. 7th Meeting of Young Neurosurgeons from State of Sao Paulo and 4th Brazilian Congress of Neurosurgical Approaches. Sao Paulo, Brazil, November 18, 2016.
692. Lawton MT: Management of PICA aneurysms. 7th Meeting of Young Neurosurgeons from State of Sao Paulo and 4th Brazilian Congress of Neurosurgical Approaches. Sao Paulo, Brazil, November 19, 2016.
693. Lawton MT: Management of deep cavernous malformations. 7th Meeting of Young Neurosurgeons from State of Sao Paulo and 4th Brazilian Congress of Neurosurgical Approaches. Sao Paulo, Brazil, November 19, 2016.
694. Lawton MT: Management of brain arteriovenous malformations. 7th Meeting of Young Neurosurgeons from State of Sao Paulo and 4th Brazilian Congress of Neurosurgical Approaches. Sao Paulo, Brazil, November 19, 2016.

695. Lawton MT: Future directions in brain arteriovenous malformations. 7th Meeting of Young Neurosurgeons from State of Sao Paulo and 4th Brazilian Congress of Neurosurgical Approaches. Sao Paulo, Brazil, November 18, 2016.
696. Lawton MT: In defense of overlapping surgery: Running two rooms is safe and invaluable. California Association of Neurological Surgeons Annual Meeting. San Francisco, CA, January 14, 2017.
697. Lawton MT: Seven bypasses: Tenets and techniques for revascularization. Royal College of Neurological Surgeons of Thailand, Annual Meeting. Bangkok, Thailand, February 15, 2017.
698. Lawton MT: AVM case: Contralateral posterior interhemispheric approach to splenial arteriovenous malformation. Joint Cerebrovascular Section, Annual Meeting. Houston, TX, February 21, 2017.
699. Lawton MT: Surgical management of brain AVMs and patient selection. The Winter Clinics for Cranial and Spinal Surgery. Aspe, CO, March 2, 2017.
700. Lawton MT: Vertebral artery transposition, contralateral AVM resection, and a defense of overlapping surgery. Neurosurgery at Jackson Hole. Jackson Hole, WY, March 6, 2017.
701. Lawton MT: Technical mastery and shortening the learning curve. Washington Area Neurosurgical Society Meeting. Washington, DC, April 5, 2017.
702. Lawton MT: Seven AVMs: Making Sense of AVM Surgery. Georgetown University Grand Rounds. Washington, DC, April 6, 2017.
703. Lawton MT: Seven AVMs: Making sense of AVM surgery. 35th Annual Spring Meeting of the Korean Neurosurgical Society. Seoul, South Korea, April 14, 2017.
704. Lawton MT: Seven Bypass: Tenets and techniques of revascularization. 35th Annual Spring Meeting of the Korean Neurosurgical Society. Seoul, South Korea, April 14, 2017.
705. Lawton MT: Future of vascular neurosurgery. Spetzler Symposium. Los Angeles, CA, April 20, 2017.
706. Lawton MT: Nuances of AVM surgery and reflections on the Spetzler legacy. Spetzler Symposium. Los Angeles, CA, April 21, 2017.
707. Lawton MT: How to tackle difficult cranial cases: A step-by-step case-based presentation. American Association of Neurological Surgeons, Annual Meeting. Los Angeles, CA, April 23, 2017.
708. Lawton MT: Surgical management of supratentorial cavernous malformations. American Association of Neurological Surgeons, Annual Meeting. Los Angeles, CA, April 25, 2017.
709. Lawton MT: Evolution of multi-modality imaging and robotics in neurosurgery. American Association of Neurological Surgeons, Annual Meeting. Los Angeles, CA, April 25, 2017.
710. Lawton MT: Operative nuances: How to stay out of trouble during microsurgery. American Association of Neurological Surgeons, Annual Meeting. Los Angeles, CA, April 25, 2017.
711. Lawton MT: BNI 3.0: A strategic vision for the Barrow Neurological Institute. American Association of Neurological Surgeons, Annual Meeting. Los Angeles, CA, April 26, 2017.

712. Lawton MT: Aneurysm nuances and a strategic vision for the Barrow Neurological Institute. Barrow Neurological Symposium. May 19, 2017, Phoenix, AZ.
713. Lawton MT: Seven bypasses: Tenets and techniques for revascularization. Helsinki Live Surgery Course. Helsinki, Finland, June 6, 2017.
714. Lawton MT: Seven bypasses: Tenets and techniques for revascularization. Grand Rounds, Barrow Neurological Institute. Phoenix, AZ, July 14, 2017.
715. Lawton MT. Seven bypasses: Towards an all intracranial approach. World Federation of Neurosurgical Societies, XVI World Congress of Neurosurgery. Istanbul, Turkey, August 22, 2017.
716. Lawton MT: Case studies in vascular neurosurgery. World Federation of Neurosurgical Societies, XVI World Congress of Neurosurgery. Istanbul, Turkey, August 23, 2017.
717. Lawton MT: Surgical management of basilar apex aneurysms. World Federation of Neurosurgical Societies, XVI World Congress of Neurosurgery. Istanbul, Turkey, August 24, 2017.
718. Lawton MT: Seven aneurysms: Posterior communicating artery aneurysms. Congress of Neurological Surgeons Webinar. August 29, 2017.
719. Lawton MT: Technical mastery and shortening the learning curve. Inovative Solutions in Brain Tumor and Vascular Neurosurgery and Reconstructon. Phoenix, AZ, September 8, 2017.
720. Lawton MT: Management of anterior circulation aneurysms. Inovative Solutions in Brain Tumor and Vascular Neurosurgery and Reconstructon. Phoenix, AZ, September 9, 2017.
721. Lawton MT: Management of posterior circulation aneurysms. Inovative Solutions in Brain Tumor and Vascular Neurosurgery and Reconstructon. Phoenix, AZ, September 9, 2017.
722. Lawton MT, Winkler E, Burkhardt JK: Reduction in pericytes and vascular instability in brain AVMs. American Academy of Neurological Surgeons Annual Meeting. Santa Barbara, CA, September 15, 2017.
723. Lawton MT: Seven aneurysms: Middle cerebral artery aneurysms. Congress of Neurological Surgeons Webinar. September 20, 2017.
724. Lawton MT: Seven aneurysms: Anterior communicating artery aneurysms. Congress of Neurological Surgeons Webinar. October 4, 2017.
725. Lawton MT: Flow diversion: Easy way out? Brigham and Women's Hospital Cerebrovascular & Skull Base Symposium. Boston, MA, October 6, 2017.
726. Lawton MT: Bypass surgery in skull base surgery: Worth it or not? Brigham and Women's Hospital Cerebrovascular & Skull Base Symposium. Boston, MA, October 6, 2017.
727. Lawton MT: Advanced cerebrovascular surgery: Operative video-based surgical and anatomical pearls. Congress of Neurological Surgeons, Annual Meeting. Boston, MA, October 7, 2017.
728. Lawton MT: Seven Aneurysms: Tenets and techniques for clipping. Congress of Neurological Surgeons, Annual Meeting. Boston, MA, October 7, 2017.

729. Lawton MT: Initial first-hand experience with the Kinevo 900 microscope. Congress of Neurological Surgeons, Annual Meeting. Boston, MA, October 7, 2017.
730. Lawton MT: Technical nuances of bypass surgery. AANS Vascular Skills Course. Memphis, TN, October 21, 2017.
731. Lawton MT: Making sense of AVM surgery. Barrow Neurological Nurses Symposium. Phoenix, AZ, October 25, 2017.
732. Lawton MT: Surgical management of brain arteriovenous malformations. International Conference on Cerebrovascular Surgery. Nagoya, Japan, October 28, 2017.
733. Lawton MT: Seven bypasses. International Conference on Cerebrovascular Surgery. Nagoya, Japan, October 28, 2017.
734. Lawton MT: Surgical management of complex aneurysms. International Conference on Cerebrovascular Surgery. Nagoya, Japan, October 28, 2017.
735. Lawton MT: Surgical management of cavernous malformations. International Conference on Cerebrovascular Surgery. Nagoya, Japan, October 28, 2017.
736. Lawton MT: Initial clinical experience with the Kinevo 900 microscope. International Conference on Cerebrovascular Surgery. Nagoya, Japan, October 28, 2017.
737. Lawton MT: Keyhole approaches to aneurysms. International Conference on Cerebrovascular Surgery. Nagoya, Japan, October 29, 2017.
738. Lawton MT: Surgical management of giant aneurysms. International Conference on Cerebrovascular Surgery. Nagoya, Japan, October 29, 2017.
739. Lawton MT. Seven bypasses: Tenets and techniques for revascularization. Medtronic China Course. Phoenix, AZ, November 7, 2017.
740. Lawton MT: Seven aneurysms: Ophthalmic artery aneurysms. Congress of Neurological Surgeons Webinar. November 15, 2017.
741. Lawton MT: Seven aneurysms: Pericallosal artery aneurysms. Congress of Neurological Surgeons Webinar. December 6, 2017.
742. Lawton MT. Seven bypasses: Tenets and techniques for revascularization. Medtronic China Course. Phoenix, AZ, December 11, 2017.
743. Lawton MT. Seven bypasses: Tenets and techniques for revascularization. Visiting Professor Lecture, State University of New York. Buffalo, NY, December 14, 2017.
744. Lawton MT: Seven aneurysms: Basilar artery apex aneurysms. Congress of Neurological Surgeons Webinar. January 17, 2018.
745. Lawton MT: Godfathers and grandparents of cerebrovascular surgery. AANS/CNS Joint Cerebrovascular Section Annual Meeting. Los Angeles, CA, January 23, 2018.

746. Lawton MT: Arteriovenous malformation surgery: Tips and tricks. AANS/CNS Joint Cerebrovascular Section Annual Meeting. Los Angeles, CA, January 23, 2018.
747. Lawton MT: Barrow Ruptured Aneurysm Trial: United. AANS/CNS Joint Cerebrovascular Section Annual Meeting. Los Angeles, CA, January 23, 2018.
748. Lawton MT: Surgical management of posterior inferior cerebellar artery aneurysms. Spetzler Microneurosurgery Course, Barrow Neurological Institute. Phoenix, AZ, January 26, 2018.
749. Lawton MT: Pathogenesis of brain arteriovenous malformations. University of Arizona College of Medicine – Phoenix. Phoenix, AZ, February 2, 2018.
750. Lawton MT: Surgical resection of skull base tumors. Barrow Neurological Institute Neuro-Oncology Symposium. Phoenix, AZ, February 16, 2018.
751. Lawton MT: Cerebrovascular surgery and skull base surgery: V3 vertebral artery bypasses. North American Skull Base Society Annual Meeting. Coronado Island, CA, February 17, 2018.
752. Lawton MT: Seven aneurysms: Current state of aneurysm surgery. Barrow Live Surgery Course, Aesculap Academy. Phoenix, AZ, February 20, 2018.
753. Lawton MT: Seven bypasses: Tenets and techniques of revascularization. Barrow Live Surgery Course, Aesculap Academy. Phoenix, AZ, February 21, 2018.
754. Lawton MT: Posterior inferior cerebellar artery aneurysms. Congress of Neurological Surgeons Webinar. February 21, 2018.
755. Lawton MT: Finding midcareer learning curves in skull base and bypass surgery. Neurosurgery at Jackson Hole. Jackson, WY, March 6, 2018.
756. Lawton MT: Seven bypasses: Tenets and techniques of revascularization. Robert Wharen Lecture, Mayo Clinic – Jacksonville. Jacksonville, FL, March 12, 2018.
757. Lawton MT: Seven bypasses: Cutting edge neurosurgery treatment of stroke. Stroke 2018: 43rd Annual Meeting of the Japan Stroke Society, 47th Annual Meeting of the Japanese Society on Surgery for Cerebral Stroke, and 34th SPASM Symposium. Fukuoka, Japan, March 15, 2018.
758. Lawton MT: Treatment strategy and outcomes for large/giant proximal carotid artery aneurysms. Stroke 2018: 43rd Annual Meeting of the Japan Stroke Society, 47th Annual Meeting of the Japanese Society on Surgery for Cerebral Stroke, and 34th SPASM Symposium. Fukuoka, Japan, March 16, 2018.
759. Lawton MT: After ARUBA: AVMs without hemorrhage should be removed surgically. 27th European Stroke Conference. Athens, Greece, April 13, 2018.
760. Lawton MT: Pathogenesis of brain arteriovenous malformations and a vision for research at Barrow Neurological Institute. BNI Neuroscience Conference. Phoenix, AZ, April 24, 2018.
761. Lawton MT: How to tackle difficult cranial cases: A step-by-step case-based presentation. American Association of Neurological Surgeons Annual Meeting. New Orleans, LA, April 29, 2018.

762. Lawton MT: Cavernous malformations: Current controversies in management (brainstem and spinal lesions). American Association of Neurological Surgeons Annual Meeting. New Orleans, LA, May 1, 2018.
763. Lawton MT: Preserving the craft of microneurosurgery. Young Neurosurgeons Luncheon, American Association of Neurological Surgeons Annual Meeting. New Orleans, LA, May 1, 2018.
764. Lawton MT: Operative nuances: Challenging operative moments during microneurosurgery. American Association of Neurological Surgeons Annual Meeting. New Orleans, LA, May 1, 2018.
765. Lawton MT: Types and technical nuances of bypasses. Pre-Symposium Workshop in Microvascular Anastomosis. Phoenix, AZ, May 8, 2018.
766. Lawton MT: Technical nuances of brain AVM surgery. Barrow Neurological Institute Neurosciences Symposium. Phoenix, AZ, May 11, 2018.
767. Lawton MT: Preserving the craft of microneurosurgery. Lenox Hill Hospital Neurosurgery: Lessons of Success and Failure in Neurovascular Treatment. New York, NY, June 1, 2018.
768. Lawton MT: Preserving the craft of microneurosurgery. Helsinki Live Surgery Course. Helsinki, Finland, June 3, 2018.
769. Lawton MT: Seven Bypasses. Mission: BRAIN. Manila, Philippines, June 22, 2018.
770. Lawton MT: Preserving the craft of microneurosurgery. Mission: BRAIN. Manila, Philippines, June 22, 2018.
771. Lawton MT: Mapping in surgery for brain arteriovenous malformations. 7th Annual World Course in Advanced Brain Tumor Surgery. London, England, July 14, 2018.
772. Lawton MT: Seven bypasses: What's next in bypass surgery? World Academy of Neurological Surgeons Meeting. Prague, Czech Republic, August 30, 2018.
773. Lawton MT: Anterior inferior cerebellar artery bypasses: Application of the seven bypasses framework. World Academy of Neurological Surgeons Meeting. Prague, Czech Republic, August 30, 2018.
774. Lawton MT: Unruptured low-grade arteriovenous malformations: Policy and treatment strategy. 13th International Conference on Cerebrovascular Surgery. Prague, Czech Republic, August 31, 2018.
775. Lawton MT: Surgical approaches for brainstem cavernous malformations. 13th International Conference on Cerebrovascular Surgery. Prague, Czech Republic August 30, 2018.
776. Lawton MT: Surgical nuances in vascular neurosurgery: Video session. 13th International Conference on Cerebrovascular Surgery. Prague, Czech Republic August 30, 2018.
777. Lawton MT: Surgical management of paraclinoid aneurysms. Brazilian Congress of Neurological Surgeons. Porto Alegre, September 5, 2018.
778. Lawton MT: Surgical management of posterior inferior cerebellar artery aneurysms. Brazilian Congress of Neurological Surgeons. Porto Alegre, September 5, 2018.

779. Lawton MT: Bypass surgery for intracranial aneurysms. Brazilian Congress of Neurological Surgeons. Porto Alegre, September 5, 2018
780. Lawton MT: Surgical management of brain arteriovenous malformations. Brazilian Congress of Neurological Surgeons. Porto Alegre, September 5, 2018.
781. Lawton MT: Surgical management of large and giant aneurysms. Brazilian Congress of Neurological Surgeons. Porto Alegre, September 6, 2018.
782. Lawton MT: Surgical management of grade III brain arteriovenous malformations. Brazilian Congress of Neurological Surgeons. Porto Alegre, September 6, 2018.
783. Lawton MT: Surgical management of brainstem cavernous malformations. Brazilian Congress of Neurological Surgeons. Porto Alegre, September 6, 2018.
784. Lawton MT: Posterior circulation bypass. Brazilian Congress of Neurological Surgeons. Porto Alegre, September 7, 2018.
785. Lawton MT: Evolution in neurosurgery with surgeon-controlled robotics. Brazilian Congress of Neurological Surgeons. Porto Alegre, September 7, 2018.
786. Lawton MT: Decision-making for low-grade arteriovenous malformations. Brigham and Women's Hospital Cerebrovascular & Skull Base Symposium. Boston, MA, September 22, 2018.
787. Lawton MT: Bypass techniques. Brigham and Women's Hospital Cerebrovascular & Skull Base Symposium. Boston, MA, September 22, 2018.
788. Lawton MT: Occluded bypass salvage techniques. Brigham and Women's Hospital Cerebrovascular & Skull Base Symposium. Boston, MA, September 22, 2018.
789. Lawton MT: Inoperable high-grade arteriovenous malformations. Brigham and Women's Hospital Cerebrovascular & Skull Base Symposium. Boston, MA, September 22, 2018.
790. Lawton MT: Preserving the craft of microneurosurgery. 22nd Annual Frank P. Smith Lecture. University of Rochester Visiting Professor. Rochester, NY, September 28, 2018.
791. Lawton MT: Advanced imaging in brain AVMs and DAVFs: A necessity in the 21st century. 19th Annual Interventional Neuroradiology Symposium. Toronto, Canada, September 29, 2018.
792. Lawton MT: Surgical management of giant aneurysms. 19th Annual Interventional Neuroradiology Symposium. Toronto, Canada, September 29, 2018.
793. Lawton MT: Keyholes approaches in vascular neurosurgery. 3rd International Society for Minimally Invasive Neurosurgery Educational Meeting. Toronto, Canada, September 30, 2018.
794. Lawton MT: Innovation in bypass surgery and IC-IC bypasses. Congress of Neurological Surgeons Annual Meeting. Houston, TX, October 6, 2018.
795. Lawton MT: Neurovascular update: Bypass for complex aneurysms. Congress of Neurological Surgeons Annual Meeting. Houston, TX, October 6, 2018.

796. Yoon J, Linzey JR, Burkhardt JK, Baranoski JF, Mascitelli JR, Lawton MT: Intraoperative technical complications in cerebral revascularization surgery: An analysis of 430 consecutive cases. Congress of Neurological Surgeons Annual Meeting. Houston, TX, October 8, 2018.
797. Yoon JS, Yoon C, Blaine T, Kakarla UK, Lawton MT: Regional trends and variations in spine surgery utilization and costs. Congress of Neurological Surgeons Annual Meeting. Houston, TX, October 8, 2018.
798. Yoon JS, Yoon C, Winkler EA, Lau C, Torok I, Lawton MT: A nationwide analysis of cost variation for cerebral aneurysm treatment. Congress of Neurological Surgeons Annual Meeting. Houston, TX, October 8, 2018.
799. Belykh E, Cavallo C, Zhao X, Lawton MT, Nakaji P, Preul MC: Intraoperative imaging of cerebral vasculature and blood flow using confocal laser endomicroscopy: New perspectives in precise real-time brain fluorescence microimaging. Congress of Neurological Surgeons Annual Meeting. Houston, TX, October 8, 2018.
800. Lawton MT: Bypass surgical techniques. AANS Vascular Skills Course. Memphis, TN, October 13, 2018.
801. Lawton MT: The venous route to brain arteriovenous malformations. 4th World AVM Congress. Montreal, Canada, October 14, 2018.
802. Lawton MT: Anatomy of posterior fossa arteriovenous malformations. 4th World AVM Congress. Montreal, Canada, October 16, 2018.
803. Lawton MT: Posterior fossa arteriovenous malformations: Does the Spetzler-Martin classification apply? 4th World AVM Congress. Montreal, Canada, October 16, 2018.
804. Lawton MT: Surgery for brain arteriovenous malformations will remain the standard treatment. 4th World AVM Congress. Montreal, Canada, October 16, 2018.
805. Lawton MT: Anti-inflammatory inhibition of aneurysm rupture: Is a protective cocktail possible? American Academy of Neurological Surgeons Annual Meeting. West Palm Beach, FL, October 25, 2018.
806. Lawton MT: Multimodality treatment of brain arteriovenous malformations. Society of Vascular and Interventional Neurology Annual Meeting. San Diego, CA, November 16, 2018.
807. Lawton MT: Perspectives on robotic microscopes, hybrid visualization, and the Kinevo 900. Haushan International Neurological Conference. Shanghai, China, December 13, 2018.
808. Lawton MT: Seven bypasses: Tenets and techniques for revascularization. Haushan International Neurological Conference. Shanghai, China, December 14, 2018.
809. Lawton MT: The Seven series. Haushan International Neurological Conference. Shanghai, China, December 14, 2018.
810. Lawton MT: Suboccipital and telovelar approaches. Spetzler Microneurosurgery Course. Phoenix, AZ, January 10, 2019.

811. Lawton MT: Posterior interhemispheric approaches. Spetzler Microneurosurgery Course. Phoenix, AZ, January 11, 2019.
812. Lawton MT: Seven bypasses: Tenets and techniques for revascularization. Louisiana Neurosurgical Society Annual Meeting. New Orleans, LA, January 18, 2019.
813. Lawton MT: Preserving the craft of microneurosurgery. Louisiana Neurosurgical Society Annual Meeting. New Orleans, LA, January 18, 2019.
814. Lawton MT: Surgical master class: Arteriovenous malformations. AANS/CNS Joint Cerebrovascular Section Annual Meeting. Honolulu, HI, February 4, 2019.
815. Lawton MT: Current indications and outcomes with surgical resection of arteriovenous malformations. AANS/CNS Joint Cerebrovascular Section Annual Meeting. Honolulu, HI, February 4, 2019.
816. Baranoski J, Lawton MT: AICA bypasses for the treatment of AICA aneurysms and vertebral artery occlusion: An application of the seven bypass types and development of an AICA revascularization strategy. AANS/CNS Joint Cerebrovascular Section Annual Meeting. Honolulu, HI, February 4, 2019.
817. Lawton MT: Surgical management of dolichoectatic aneurysms. AANS/CNS Joint Cerebrovascular Section Annual Meeting. Honolulu, HI, February 5, 2019.
818. Lawton MT: Experience with the Kinevo 900 operating microscope. AANS/CNS Joint Cerebrovascular Section Annual Meeting. Honolulu, HI, February 5, 2019.
819. Lawton MT: Cerebrovascular surgery in the skull base surgery arena: Bypass for aneurysms. North American Skull Base Society Annual Meeting. Orlando, FL, February 15, 2019.
820. Lawton MT: Preserving the microsurgical craft. William Henry Hudson Lecture, Southern Neurosurgical Society Annual Meeting. Key Largo, FL, February 23, 2019.
821. Lawton MT: Anterior cerebral Artery bypasses and residual/recurrent brainstem cavernous malformations. Neurosurgery at Jackson Hole. Jackson Hole, WY, March 4, 2019.
822. Lawton MT: Seven aneurysms: Tenets and techniques for clipping. Barrow Live Surgery Course, Aesculap Academy. Phoenix, AZ, March 11, 2019.
823. Lawton MT: Seven bypasses: Tenets and techniques for revascularization. Barrow Live Surgery Course, Aesculap Academy. Phoenix, AZ, March 12, 2019.
824. Lawton MT: Surgical management of basilar aneurysms. Barrow Live Surgery Course, Aesculap Academy. Phoenix, AZ, March 13, 2019.
825. Lawton MT: Technical nuances in arteriovenous malformation surgery. Evandro de Oliviera Symposium. San Diego, CA, April 12, 2019.
826. Lawton MT: Cerebral bypass surgery: Innovations and future directions. American Association of Neurological Surgeons, Annual Meeting. San Diego, CA, April 14, 2019.

827. Lawton MT: Cavernous malformation: Current controversies in management. American Association of Neurological Surgeons, Annual Meeting. San Diego, CA, April 16, 2019.
828. Lawton MT: Operative nuances: Challenging operative moments in vascular neurosurgery. American Association of Neurological Surgeons, Annual Meeting. San Diego, CA, April 16, 2019.
829. Lawton MT: Applying engineering principles to brain aneurysms. Seminar, Arizona State University School of Engineering. Tempe, AZ, April 19, 2019.
830. Lawton MT: Brain aneurysms 101. Barrow Neurological Institute Dinner Seminar Series. Phoenix, AZ, May 9, 2019.
831. Lawton MT: Perspectives on skull base surgery. Congress of Lateral Skull Base Surgery, Barrow Temporal Bone Course. Phoenix, AZ, May 11, 2019.
832. Lawton MT: High-flow bypass techniques: From EC-IC to IC-IC techniques. BNI Neurosciences Symposium. Phoenix, AZ, May 17, 2019.
833. Lawton MT: Preserving the craft of microneurosurgery. Grand Rounds, Barrow Neurological Institute. Phoenix, AZ, May 24, 2019.
834. Lawton MT: Seven AVMs: Surgical master class. Helsinki Live Surgery Course. Helsinki, Finland, June 5, 2019.
835. Lawton MT: Seven bypasses: Surgical master class. Helsinki Live Surgery Course. Helsinki, Finland, June 6, 2019.
836. Lawton MT: Surgical management of brain arteriovenous malformations (Honored Guest Lecture). Rocky Mountain Neurosurgical Society Annual Meeting. Durango, CO, June 16, 2019.
837. Lawton MT: Bypass surgery for complex aneurysms (Honored Guest Lecture). Rocky Mountain Neurosurgical Society Annual Meeting. Durango, CO, June 17, 2019.
838. Lawton MT: Seven arteries: Landmarks that every neurosurgeon must know. 8th Annual World Course in Advanced Brain Tumor Surgery. London, England, July 20, 2019.
839. Lawton MT: Arteriovenous malformation resection from eloquent brain regions. 8th Annual World Course in Advanced Brain Tumor Surgery. London, England, July 21, 2019.
840. Lawton MT: Microsurgical management of grade III arteriovenous malformations. Society of Neuro-Interventional Surgery Annual Meeting. Miami, FL, July 25, 2019.
841. Lawton MT: Seven arteries: The neurosurgeon's roadmap and compass. Grand Rounds, Barrow Neurological Institute. Phoenix, AZ, July 26, 2019.
842. Lawton MT: Orbitozygomatic-pretemporal-transcavernous approach. Surgical techniques in neurosurgery. Salt Lake City, UT, August 24, 2019.
843. Lawton MT: Far-lateral and transpetrosal approaches. Surgical techniques in neurosurgery. Salt Lake City, UT, August 25, 2019.

844. Lawton MT: Surgical management of middle cerebral artery aneurysms. European Society for Minimally Invasive Neurological Therapy (ESMINT). Nice, France, September 4, 2019.
845. Lawton MT: Seven AVMs: Microsurgical master class. Vascular Section Meeting of the European Association of Neurological Surgeons. Nice, France, September 5, 2019.
846. Lawton MT: Aneurysms: Why and when surgical treatment. Society of Italian Neurosurgery National Congress. Rome, Italy, September 18, 2019.
847. Lawton MT: Early gene deletion generates a high-fidelity transgenic mouse model of familial brain AVM. American Academy of Neurological Surgeons Annual Meeting. Rome, Italy, September 19, 2019.
848. Lawton MT: Seven aneurysms: Anterior circulation. Congresso Brasileiro de Atualizacao em Neurocirurgia (CBAN). Rio de Janeiro, Brazil, September 25, 2019.
849. Lawton MT: Seven aneurysms: Posterior circulation. Congresso Brasileiro de Atualizacao em Neurocirurgia (CBAN). Rio de Janeiro, Brazil, September 25, 2019.
850. Lawton MT: Seven bypasses: Tenets and techniques for revascularization. Congresso Brasileiro de Atualizacao em Neurocirurgia (CBAN). Rio de Janeiro, Brazil, September 25, 2019.
851. Lawton MT: Surgical management of giant aneurysms. Congresso Brasileiro de Atualizacao em Neurocirurgia (CBAN). Rio de Janeiro, Brazil, September 26, 2019.
852. Lawton MT: Surgical management of brainstem cavernous malformations. Congresso Brasileiro de Atualizacao em Neurocirurgia (CBAN). Rio de Janeiro, Brazil, September 26, 2019.
853. Lawton MT: Seven saves: Brain surgery and the great beyond. Sandra Day O'Connor Institute. Phoenix, AZ, October 2, 2019.
854. Lawton MT: Clip vs. tech: Should we be clipping aneurysms? Brigham and Women's Cerebrovascular and Skull Base Surgery Symposium. Boston, MA, October 5, 2019.
855. Lawton MT: Intracranial-intracranial bypass techniques. Congress of Neurological Surgery, Annual Meeting. San Francisco, CA, October 19, 2019.
856. Lawton MT: A "clip first" approach to middle cerebral artery aneurysms. Congress of Neurological Surgery, Annual Meeting. San Francisco, CA, October 20, 2019.
857. Lawton MT: Operative highlight: Innovations in bypass surgery. Congress of Neurological Surgery, Annual Meeting. San Francisco, CA, October 20, 2019.
858. Lawton MT: Bypass occlusion: Combination superficial temporal artery-middle cerebral artery bypass and M2-M2 reanastomosis with trapping of a stented distal MCA aneurysm (operative video). Congress of Neurological Surgery, Annual Meeting. San Francisco, CA, October 21, 2019.
859. Lawton MT: Giant aneurysms: Surgical treatment. Barrow Neurological Institute Nursing Symposium. Phoenix, AZ, October 29, 2019.

860. Lawton MT: Seven aneurysms: Tenets and techniques for clipping. Charite Hospital Grand Rounds/Visiting Professorship. Berlin, Germany, November 1, 2019.
861. Lawton MT: Seven AVMs: Tenets and techniques for resection. Charite Hospital Grand Rounds/Visiting Professorship. Berlin, Germany, November 1, 2019.
862. Lawton MT: Seven bypasses: Tenets and techniques for revascularization. Charite Hospital Grand Rounds/Visiting Professorship. Berlin, Germany, November 2, 2019.
863. Lawton MT: The Barrow school of Neurosurgery. Charite Hospital Grand Rounds/Visiting Professorship. Berlin, Germany, November 1, 2019.
864. Lawton MT: Seven AVMs: Surgical master class. World Advisory Neurosurgical Group, Annual Summit. Shanghai, China, November 9, 2019.
865. Lawton MT: Anterior cerebral artery bypass for complex aneurysms: Advances in intracranial-intracranial bypass techniques. Western Neurosurgical Society, Annual Meeting. Scottsdale, AZ, November 11, 2019.
866. Lawton MT: Seven AVMs and the role of surgical management. 5th Bellaria Neurovascular Conference: New Lights in the Diagnosis and Management of Cerebral AVMs. Bologna, Italy, November 15, 2019.
867. Lawton MT: Posterior fossa AVMs. 5th Bellaria Neurovascular Conference: New Lights in the Diagnosis and Management of Cerebral AVMs. Bologna, Italy, November 16, 2019.
868. Lawton MT: Early gene deletion generates a high-fidelity transgenic mouse model of familial brain arteriovenous malformations. World Academy of Neurological Surgeons. Mumbai, India, December 4, 2019.
869. Lawton MT: Seven bypasses: Evolving the craft of revascularization (B. Ramamurthi Oration). Joint Meeting of the Asian Australian Congress of Neurological Surgeons, Neurological Society of India, and International Meningioma Society. Mumbai, India, December 5, 2019.
870. Lawton MT: Seven AVMs: Reflections on battling the enemy. Joint Meeting of the Asian Australian Congress of Neurological Surgeons, Neurological Society of India, and International Meningioma Society. Mumbai, India, December 5, 2019.
871. Lawton MT: Seven bypasses: Evolving the craft of revascularization. New York University Neurosurgery Update. New York, NY, December 6, 2019.
872. Lawton MT: Barrow 3.0 @ 2.5 years: How are we doing? Joint Neurosurgery and Neurology Grand Rounds, Barrow Neurological Institute. Phoenix, AZ, December 20, 2019.
873. Lawton MT: Anterior clinoidectomy: Clinical applications. Annual Spetzler Microneurosurgery Course, Barrow Neurological Institute. Phoenix, AZ, January 9, 2020.
874. Lawton MT: Transcavernous approach: Clinical applications. Annual Spetzler Microneurosurgery Course, Barrow Neurological Institute. Phoenix, AZ, January 10, 2020.

875. Lawton MT: Seven bypasses: Evolving the craft of revascularization. Visiting Professor Lecture, University of Texas – San Antonio. San Antonio, TX, Feb 7, 2020.
876. Lawton MT: Surgical techniques for internal maxillary artery bypass (Rhoton Room). North American Skull Base Surgery Annual Meeting. San Antonio, TX, Feb 8, 2020.
877. Lawton MT: The grade VII AVM: Pushing the boundary of resection. Neurosurgery at Jackson Hole. Jackson, WY, March 3, 2020.
878. Lawton MT: Seven aneurysms: Tenets and techniques for clipping. Barrow Live Aneurysm Surgery Course. Phoenix, AZ, March 9, 2020.
879. Lawton MT: Seven AVMs: Tenets and techniques for resection. Barrow Live Aneurysm Surgery Course. Phoenix, AZ, March 10, 2020.
880. Lawton MT: Seven bypasses: Tenets and techniques for revascularization. Barrow Live Aneurysm Surgery Course. Phoenix, AZ, March 11, 2020.
881. Lawton MT: Far lateral approach, clipping of PICA aneurysms, and preserving the craft of open microneurosurgery. Lawton-Tanikawa West-East Vascular Neurosurgery Course: The Last Samurai. Phoenix, AZ, March 13, 2020.

POSTER PRESENTATIONS

1. Lawton MT, Golfinos JG, Harrington T, Sonntag VKH: Operative management of arachnoid cysts. American Association of Neurological Surgeons, 61st Annual Meeting. Boston, MA, April 24-29, 1993.
2. Lawton MT, Hamilton MC, Spetzler RF: Treatment of arteriovenous malformations located in thalamus, basal ganglia, and brain stem. Congress of Neurological Surgeons, 43rd Annual Meeting. Vancouver, BC, October 2-7, 1993.
3. Lawton MT, Porter RW, Sonntag VKH, Dickman CA: Management of spinal epidural hematomas: The relationship between surgical timing and neurological outcome. American Association of Neurological Surgeons, 62nd Annual Meeting. San Diego, CA, April 10-14, 1994.
4. Lawton MT, Hamilton MG, Spetzler RF: Revascularization and aneurysm surgery: Current techniques and outcome. Congress of Neurological Surgeons, 44th Annual Meeting. Chicago, IL, October 1-6, 1994.
5. Lawton MT, Thompson BG, Spetzler RF: Management of intracavernous internal carotid artery aneurysms. Congress of Neurological Surgeons, 44th Annual Meeting. Chicago, IL, October 1-6, 1994.

6. Lawton MT, Hamilton MG, Daspit CP, Spetzler RF: The combined supra- and infratentorial approach: An update. Congress of Neurological Surgeons, 44th Annual Meeting. Chicago, IL, October 1-6, 1994.
7. Golfinos JG, Lawton MT, Brown AP, Daspit CP, Spetzler RF: Low-grade adenocarcinoma of probable endolymphatic sac origin: Management of two cases by a transcochlear approach and review of the literature. North American Skull Base Society, 6th Annual Meeting. Naples, FL, February 18-21, 1995.
8. Morcos JJ, Lawton MT, Spetzler RF, Zabramski JM: Basilar bifurcation aneurysms: Surgical treatment, results, and lessons learned over 10 years. American Association of Neurological Surgeons, 63rd Annual Meeting. Orlando, FL, April 22-27, 1995.
9. Lawton MT, Morcos JJ, Spetzler RF: Giant middle cerebral artery aneurysms: Surgical experience, outcome, and lessons learned. Congress of Neurological Surgeons, 45th Annual Meeting. San Francisco, CA, October 1995.
10. Lawton MT, Morcos JJ, Spetzler RF: Recent trends in the management of large and giant midbasilar artery aneurysms. Congress of Neurological Surgeons, 45th Annual Meeting. San Francisco, CA, October 1995.
11. Morcos JJ, Lawton MT, Spetzler RF, Zabramski JM: Basilar bifurcation aneurysms: A 10 year series of 70 surgical cases. Surgical treatment, results, and lessons learned. Congress of Neurological Surgeons, San Francisco, CA, October 1995.
12. Lawton MT, Ho JC, Bichard W, Zabramski JM, Spetzler RF: Titanium aneurysm clips: Mechanical, radiological, and biocompatibility testing. American Association of Neurological Surgeons, 64th Annual Meeting. Minneapolis, MN, April 27-May 2, 1996.
13. Lawton MT, Heiserman JE, Prendergast VC, Spetzler RF: Titanium aneurysm clips: Clinical application in 16 subarachnoid hemorrhage patients. American Association of Neurological Surgeons, 64th Annual Meeting. Minneapolis, MN, April 27-May 2, 1996.
14. Lawton MT, Spetzler RF, Golfinos JG: The contralateral transcallosal approach for intraventricular vascular lesions. American Association of Neurological Surgeons, 64th Annual Meeting. Minneapolis, MN, April 27-May 2, 1996.
15. Porter RW, Lawton MT, Beals S, Joganic E, Spetzler RF: Transfacial approaches to angiofibromas. 2nd International Skull Base Congress/7th Annual Meeting of the North American Skull Base Society. San Diego, CA, June 29-July 4, 1996.
16. Lawton MT, Sankhla SK, Daspit CP, Holliday MJ, Long DM, Spetzler RF: A classification scheme for large glomus jugulare tumors extending intracranially: Experience with 22 patients. Congress of Neurological Surgeons, 46th Annual Meeting. Montreal, September 28 - October 3, 1996.
17. Lawton MT, Raudzens PA, Jacobowitz R, Zabramski JM, Spetzler RF: Hypothermic circulatory arrest in vascular neurosurgery. Evolving indications and predictors of patient outcome. Joint Section of Cerebrovascular Surgery Annual Meeting. Anaheim, CA, February 4-6, 1997.
18. Lawton MT, Jacobowitz R, Spetzler RF: The role of angiogenesis in the development of dural arteriovenous malformations redefined. Joint Section on Cerebrovascular Surgery Annual Meeting. Anaheim, CA, February 4-6, 1997.

19. Lawton MT, Raudzes PA, Koopot R, Jacobowitz R, Greene KA, Zabramski JM, Spetzler RF: Hypothermic circulatory arrest in vascular neurosurgery: Evolving indications and predictors of patient outcomes. American Association of Neurological Surgeons, 65th Annual Meeting. Denver, CO, April, 1997.
20. Lawton MT, Jacobowitz R, Spetzler RF: Hypothermic circulatory arrest in vascular neurosurgery: A cost analysis. American Association of Neurological Surgeons, 65th Annual Meeting. Denver, CO, April, 1997.
21. David CA, Lawton MT, Karahalios DG, Spetzler RF: Dolichoectatic aneurysm formation after therapeutic arterial occlusion. American Association of Neurological Surgeons, 65th Annual Meeting. Denver, CO, April, 1997.
22. Johnston SC, Smith WS, Dowd CF, Higashida RT, Halbach VV, Bonovich DC, Gress DR, Lawton MT: De novo dural arteriovenous fistulae caused by cerebral sinus thrombosis: Case report. Joint Section on Cerebrovascular Surgery Annual Meeting. Orlando, FL, February 1 - 4, 1998.
23. Vishteh AG, Sankhla SK, Lawton MT, McDougall CG, Zabramski JM, Spetzler RF: Toward a multimodality treatment algorithm for cavernous internal carotid artery aneurysms. Congress of Neurological Surgeons, 48th Annual Meeting. Seattle, WA, October 6, 1998.
24. Chun J, Wilson CB, Lawton MT: Management of anterior cranial fossa dural arteriovenous fistulas. Joint Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology Annual Meeting. Nashville, TN, January 31-February 3, 1999.
25. Lawton MT, Smyth M: The posterior interhemispheric approach for cerebrovascular lesions. Joint Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology Annual Meeting. Nashville, TN, January 31-February 3, 1999.
26. Johnston SC, Wilson CB, Halbach VV, Higashida RH, Dowd CF, Lawton MT, McDermott MW, Applebury CB, Farley TL, Gress DR: Risks associated with treatment of unruptured aneurysms. 24th American Heart Association International Conference of Stroke and Cerebral Circulation. Nashville, TN, February 4-6, 1999.
27. Lawton MT, Smyth M: The posterior interhemispheric approach for cerebrovascular lesions. Annual Meeting of the American Association of Neurological Surgeons. New Orleans, LA, April 24-29, 1999.
28. Vates GE, Lawton MT, Wilson CB, Halbach VV, Roberts TPL, Rowley H: Magnetic source imaging demonstrates altered cortical distribution of function in patients with arteriovenous malformations. Joint Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology. New Orleans, LA, February 6-9, 2000.
29. Lawton MT, Halbach VV, Higashida RT, Dowd CF: Revascularization for aneurysms in combined surgical and endovascular therapies. Congress of Neurological Surgeons Annual Meeting. San Antonio, TX, September 23 - 28, 2000.
30. Lawton MT, Theodosopolous PV: Deep cortical arteriovenous malformations. Congress of Neurological Surgeons Annual Meeting. San Antonio, TX, September 23 - 28, 2000.

31. Chun JY, Smith W, Halbach VV, Higashida RT, Wilson CB, Lawton MT: Current multimodality management of infectious intracranial aneurysms. Joint Meeting of the AANS/CNS Section on Cerebrovascular Surgery and the American Society of Interventional and Therapeutic Neuroradiology. Big Island, HI, February 9 – 12, 2001.
32. Chun JY, Smith W, Halbach VV, Higashida RT, Wilson CB, Lawton MT: Current multimodality management of infectious intracranial aneurysms. American Association of Neurological Surgeons, Annual Meeting. Toronto, Ontario, Canada, April 21-26, 2001.
33. Singh V, Johnston SC, Gress DR, Halbach VV, Lawton MT, Higashida RT, Dowd CF, Young WL: Characteristics of intracranial arteriovenous malformations associated with cerebral aneurysms. American Academy of Neurology Annual Meeting. Philadelphia, PA, May 5 -12, 2001.
34. Sanai N, Quinones-Hinojosa A, Vates GE, Wilson CB, Lawton MT: Pediatric intracranial aneurysms: The University of California San Francisco experience for the past 24 years. Congress of Neurological Surgeons. Philadelphia, PA, September 21-26, 2002.
35. Tung PP, Kopelnik A, Banki NM, Ong KC, Ko NU, Lawton MT, Gress DR, Drew B, Foster E, Parmley WW, Zaroff JG: The severity of brain injury and female gender predict myocardial necrosis after subarachnoid hemorrhage. American College of Cardiology Meeting, 2002.
36. Vates GE, Hashimoto T, Young WL, Ordahl CP, Lawton MT: Brain angiogenesis during development: Effects of VEGF and Ang-2 in an animal model. American Association of Neurological Surgeons, Annual Meeting. San Diego, CA, April 26 – May 1, 2003.
37. McDermott MW, Russell B, Quinine N, Halim A, Lawton MT, Young WL: Physical activity at the time of AVM rupture: A review of 80 cases. American Association of Neurological Surgeons, Annual Meeting. San Diego, CA, April 26 – May 1, 2003.
38. Quinones-Hinajosa A, Chang E, Lawton MT: The translabyrinthine approach for the resection of pontine lesions. American Association of Neurological Surgeons, Annual Meeting. San Diego, CA, April 26 – May 1, 2003.
39. Quinones-Hinajosa A, Sanai N, Dowd CF, Lawton MT: Selective revascularization and occlusion of complex intracranial aneurysms. American Association of Neurological Surgeons, Annual Meeting. San Diego, CA, April 26 – May 1, 2003.
40. Lawton MT: Spetzler-Martin grade III arteriovenous malformations: Surgical results and a modification of the grading scale. American Association of Neurological Surgeons, Annual Meeting. San Diego, CA, April 26 – May 1, 2003.
41. Miss JC, Lawton MT, Kopelnik A, Tung PP, Banki NM, Smith WS, Dowd CF, Zaroff JG: Aneurysm clipping vs. coiling after subarachnoid hemorrhage: Effect on cardiac injury and dysfunction. American Association of Neurological Surgeons, Annual Meeting. San Diego, CA, April 26 – May 1, 2003.
42. Von Koch CS, Young G, Chin CT, Lawton MT: Magnetic resonance imaging/spectroscopy of an intraxial epidermoid: Similarity to an abscess. American Association of Neurological Surgeons, Annual Meeting. San Diego, CA, April 26 – May 1, 2003.
43. Vates GE, Smith M, Chi J, Lawton MT: The posterior interhemispheric approach to lesions near the vein of Galen. Congress of Neurological Surgeons, Annual Meeting. Denver, CO, October 18-23, 2003.

44. Quinones-Hinojosa, Chang EF, Lawton MT: Evaluation of CT angiography in the detection of intracranial aneurysms leading to surgical repair without conventional angiography. Congress of Neurological Surgeons, Annual Meeting. Denver, CO, October 18-23, 2003.
45. Quinones-Hinojosa A, Alam M, Lyon R, Lawton MT: Transcranial motor evoked potentials during basilar aneurysm surgery: Are they more sensitive in detecting changes in deep brain perfusion than somatosensory evoked potentials? Congress of Neurological Surgeons, Annual Meeting. Denver, CO, October 18-23, 2003.
46. Sanchez-Mejia R, Chennupati S, Nalin G, Perry V, McDermott MW, Dowd CF, Young WL, Lawton MT: Microsurgical treatment of pediatric arteriovenous malformations: Recent UCSF experience. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 16-21, 2004.
47. Sanchez-Mejia R, Pham DN, Quinones-Hinojosa A, Lawton MT: Microsurgical treatment of dural arteriovenous fistulas: Recent UCSF experience. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 16-21, 2004.
48. Binder DK, Sanai N, Lawton MT: The wine press of Herophilus and his other contributions to neuroanatomy. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 16-21, 2004.
49. Quinones-Hinojosa A, Lyon R, Du R, Lawton MT: Intraoperative motor mapping of the cerebral peduncle during resection of a midbrain cavernous malformation. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 16-21, 2004.
50. Fullerton HJ, Achrol AS, Johnston SC, McCulloch CE, Higashida RT, Lawton MT, Sidney S, Young WL: Intracranial hemorrhage risk in children versus adults with brain arteriovenous malformations. International Stroke Conference. New Orleans, LA, February 2005.
51. Yarlaga S, Miss J, Kopelnik A, Banki N, Fisher L, Ko N, Smith W, Lawton MT, Gelb A, Zaroff J: Cardiovascular predictors of vasospasm and death after subarachnoid hemorrhage. International Stroke Conference. New Orleans, LA, February 1-4, 2005.
52. Yarlaga S, Kopelnik A, Kothavale A, Miss J, Banki N, Fisher L, Ko N, Smith W, Lawton MT, Gelb A, Zaroff J: Left ventricular hypertrophy after subarachnoid hemorrhage: An acute and reversible process? International Stroke Conference. New Orleans, LA, February 1-4, 2005.
53. Zaroff J, Hindman B, Fisher L, Short T, Greif R, Spinka R, Myles P, Lawton MT, Litt L, Samra S, Thompson BG Jr., Lam A, Craen R, Novick T, Gelb AW: Intraoperative hypothermia and the risk of cardiac injury and dysfunction in patients with subarachnoid hemorrhage. International Stroke Conference. New Orleans, LA, February 1-4, 2005.
54. Yarlaga S, Miss J, Kopelnik A, Banki N, Fisher L, Ko N, Smith W, Lawton MT, Gelb A, Zaroff JG: Elevated heart rate, troponin release, and left ventricular dysfunction predict vasospasm and death after subarachnoid hemorrhage. International Stroke Conference. New Orleans, LA, February 1-4, 2005.
55. Yarlaga S, Pawlikowska L, Miss JC, Kopelnik A, Achrol AS, Ha C, Lawton MT, Kwok PY, Young WL, Zaroff JG: Single nucleotide polymorphisms in the gene promoters encoding interleukin 6 and 10 are associated with cardiac injury and dysfunction after subarachnoid hemorrhage. International Stroke Conference. New Orleans, LA, February 1-4, 2005.

56. Yarlagadda S, Kothavale A, Miss J, Kopelnik A, Banki N, Fisher L, Ko N, Smith W, Lawton MT, Gelb A, Zaroff JG: Left ventricular hypertrophy after subarachnoid hemorrhage: An acute and reversible process? International Stroke Conference. New Orleans, LA, February 1-4, 2005.
57. Du R, Dowd CF, Johnston SC, Young WL, Lawton MT: Interobserver variability of brain arteriovenous malformations using the the Spetzler-Martin grading system. American Association of Neurological Surgeons, Annual Meeting. New Orleans, LA, April 16-21, 2005.
58. Chen Y, Fan Y, Zhu Y, Achrol AS, Poon KY, Lawton MT, Barbaro NM, Yang GY, Young WL: Matrix metalloproteinase-9 expression is associated with myeloperoxidase level in brain AVM. Society of Neurosurgical Anesthesia and Critical Care. New Orleans, LA, October 22, 2005.
59. Quinones-Hinojosa A, Lawton MT: In situ bypass in the management of complex intracranial aneurysms: Technique application in 13 patients. Congress of Neurological Surgeons, Annual Meeting. Boston, MA, October 8-13, 2005.
60. Du R, Young WL, Lawton MT: The role of diffuseness on outcome after microsurgical resection of arteriovenous malformations. AANS/CNS Cerebrovascular Section and The American Society of Interventional & Therapeutic Neuroradiology Annual Meeting. Orlando, FL, February 17-20, 2006.
61. Singh V, Smith WS, Nguyen-Huynh M, Young WL, Lawton MT, Halbach VV: Hemorrhagic presentations of dural arteriovenous fistulas. American Association of Neurology, Annual Meeting. San Diego, CA, April 6, 2006.
62. Du R, Keyoung HM, Dowd CF, Young WL, Lawton MT: The effect of diffuse borders and deep perforators on microsurgical outcomes of arteriovenous malformations. Congress of neurological Surgeons Annual Meeting. Chicago, IL, October 7-12, 2006.
63. Sanchez-Mejia R, Lawton MT: Basilar trunk perforating artery aneurysms and pretruncal subarachnoid hemorrhage. Congress of neurological Surgeons Annual Meeting. Chicago, IL, October 7-12, 2006.
64. Wang VYC, McDermott MW, Pitts LH, Kunwar S, Gupta N, Parsa AT, Barbaro NM, Lawton MT: Complications associated with the use of lumbar peritoneal shunts: UCSF experience. Congress of neurological Surgeons Annual Meeting. Chicago, IL, October 7-12, 2006.
65. Achrol AS, Kim H, Pawlikowska L, Hysi PG, Johnston SC, McCulloch CE, McDermott MW, Lawton MT, Kwok PY, Young WL: Tumor necrosis factor-alpha polymorphism is associated with intracranial hemorrhage after brain arteriovenous malformation treatment. International Stroke Conference. San Francisco, CA, February 7-9, 2007.
66. Tsou TL, Kurihara C, Young WL, Lawton MT, Hashimoto T: Successful implantation of human brain arteriovenous malformation tissue in immunodeficient rodents. American Society of Anesthesiologists Annual Meeting. San Francisco, CA, October 16, 2007.
67. Kim H, Su H, Pawlikowska L, Kitamura H, Shen F, Cambier S, Markovics J, Lawton MT, Sidney S, Bollen A, Kwok PY, Reichardt L, Young WL, Yang GY, Nishimura SL: Reduced expression of ingrin avb8 is associated with brain arteriovenous malformation pathogenesis. American Society of Human Genetics, Annual Meeting. Philadelphia, PA, November 11-15, 2008.

68. Rodriguez-Hernandez A, Josephson AS, Lawton MT: Bypass for ischemic stroke. Congress of Neurological Surgeons, Annual Meeting. Washington, DC, October 2-5, 2011.
69. Rodriguez-Hernandez A, Lawton MT: Flash fluorescence technique with indocyanine green videoangiography for bypass in distal middle cerebral artery aneurysms. Congress of Neurological Surgeons, Annual Meeting. Washington, DC, October 2-5, 2011.
70. Weinsheimer S, Bendjilali N, Pawlikowska L, Kwok PY, Lawton MT, Zaroff J, Sidney S, McCulloch CE, Kim H, Young WL: Common polymorphisms in familial vascular malformation genes do not show association with sporadic brain arteriovenous malformation. International Stroke Conference. New Orleans, LA, February 1-3, 2012.
71. Rodriguez-Hernandez A, Zador Z, Rodriguez Mena R, Lawton MT: Distal aneurysms of intracranial arteries: Application of numerical nomenclature, predilection for cerebellar arteries, and results of surgical management. American Association of Neurological Surgeons Annual Meeting. Miami, FL, April 14-18, 2012.
72. Davies J, Young WL, Lawton MT: Classification schemes for arteriovenous malformations. 1st World AVM Congress. Edinburgh, Scotland, September 18, 2012.
73. Kim H, Pourmohamad T, McCulloch CE, Lawton MT, Mohr JP, Stapf C, Zaroff JG, Sidney S, Young WL, Al-Shahi Salman R: Multicenter study of predictors for intracranial hemorrhage risk in the natural history of brain arteriovenous malformations. 1st World AVM Congress. Edinburgh, Scotland, September 18, 2012.
74. Rodriguez Hernandez A, Kim H, Pourmohamad T, Young WL, Lawton MT: Cerebellar arteriovenous malformations: Anatomical subtypes, surgical results, and increased predictive accuracy of the supplementary grading system. 1st World AVM Congress. Edinburgh, Scotland, September 18, 2012.
75. Sheth SA, Lawton MT, Josephson SA: Worse outcome after intraoperative re-rupture in subarachnoid hemorrhage not due to increased vasospasm. International Stroke Conference. February 4, 2013, Honolulu, HI.
76. Guo L, Cui W, Wolf F, Lawton MT, Gelb AW: Monitoring upper and lower limb motor evoked potentials is no better than upper limb alone to predict outcome during cerebral aneurysm surgery. American Society of Anesthesiologists, Annual Meeting, 2013.
77. Wolf FA, Gelb AW, Cui W, Mensah M, Kofler E, Lawton MT, Feiner J, Guo L: Do motor or sensory evoked potentials during aneurysm surgery predict postoperative deficits? American Society of Anesthesiologists, Annual Meeting, 2013.
78. Torne R, Rodriguez-Hernandez A, Lawton MT: Intraoperative rupture during surgical resection of arteriovenous malformations. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 21, 2013.
79. Garcia R, Ivan M, Lawton MT: Outcome predictors of brainstem cavernous malformations. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 21, 2013.
80. Davies J, Trinh VT, Lawton MT: In-hospital outcomes after extracranial-intracranial bypass in the United States, 2000-2009: The effect of hospital and surgeon volume. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 21, 2013.

81. Fox C, Stout C, Fullerton H, Auguste KI, Dowd CF, Higashida RT, Halbach VV, Lawton MT, Gupta N: Posterior circulation stroke in children due to anomalies of the cervical spine. Congress of Neurological Surgeons, Annual Meeting. San Francisco, CA, October 21, 2013.
82. Davies J, Lawton MT: Variations in neurosurgical readmission rates for ruptured aneurysms by hospital volume and treatment modality. Academy Health's Annual Research Meeting. San Diego, CA, June 10, 2014.
83. Pawlikowska L, Nelson J, Guo DE, McCulloch CM, Lawton MT, Young WL, Kim H, Faughnan ME, and the Brain Vascular Malformation Consortium Investigator Group: The ACVRL1-IVS3-35A>G polymorphism is associated with arteriovenous malformations in hereditary hemorrhagic telangiectasia patients with ENG mutations, but not in patients with ACVRL1 mutations. 64th Annual Meeting of the American Society for Human Genetics. San Diego, CA, October 2014.
84. Rayz VL, Zaidat O, Halbach VV, Saloner D, Lawton MT: Computational modeling of postoperative flow and thrombosis in cerebral aneurysms. Society of Neurointerventional Surgery Annual Meeting. San Francisco, CA, July 29, 2015.
85. Kim H, Nelson J, McCulloch CE, Lawton MT, Mohr JP, Stapf C, Al-Shahi Salman R: Comparing risk of stroke and death in treated and untreated patients with brain arteriovenous malformations. International Stroke Conference. Los Angeles, CA, February 17-19, 2016.

RESEARCH PROGRAM

Development of Experimental Models for Arteriovenous Malformations

One of my main research aims has been to develop an animal model for arteriovenous malformations. My earliest research used a venous hypertension model in rats to produce dural arteriovenous fistulas and demonstrate the role of angiogenesis in their development. My Mentored Clinical Scientist Development Award (K08) was used to develop and characterize a new experimental model that interposed transgenic mouse aorta in a surgically-created carotid artery-to-jugular vein fistula in nude rats. The model replicated the angio-architecture and hemodynamics of a simple arteriovenous malformation, and enabled genetically modified arterial tissue to be tested for a different occlusive response to radiation than normal artery. Endoglin, a gene implicated in hereditary hemorrhagic telangiectasia and in the pathogenesis of brain AVMs, was studied extensively. Current mouse models utilize conditional gene deletion of ALK-1 and angiogenic stimulation with VEGF to stimulate AVM formation. This model system has produced the closest replica of human brain AVMs and we are investigating methods to grow larger AVMs with additional hemodynamic stimulation or inhibit AVM formation with receptor blockade.

Angiogenesis in Arteriovenous Malformations and Dural Arteriovenous Fistulae

The role of angiogenesis and inflammation in arteriovenous malformations has been a major focus of my research. My earliest research identified angiogenesis as an important participant in the pathogenesis of dural arteriovenous fistulae. Current research is investigating mechanisms by which cerebral ischemia and venous hypertension stimulate angiogenesis and DAVF development. We recently identified hypoxia-inducible factor-1 as an earlier agent in this pathogenesis, which may then elicit the expression of vascular endothelial growth factor. The mechanism that translates venous hypertension to HIF-1 expression, and the downstream effects of VEGF expression, are under investigation.

Brain AVMs are more common clinically than DAVFs, and surgical AVM specimens have provided an opportunity to bank these tissues and analyze them for angiogenesis and inflammatory activity. We discovered significant increases in the expression of such factors as angiopoietins, integrins, interleukins (IL-6), metalloproteinases (MMP-9), and tissue inhibitors of metalloproteinases in AVM specimens, as compared to brain tissue. In addition, we examined patients for relationships between genetic polymorphisms in key angiogenesis and inflammatory genes and clinical AVM behavior. Single nucleotide polymorphisms in genes encoding IL-6, TNF-alpha, endoglin, and apolipoprotein E can have significant impact on AVM hemorrhage. The collaborative effort of the Center for Cerebrovascular Research will continue to examine these molecular factors that influence AVM development, maintenance, and hemorrhage. These clinical insights will inform the laboratory efforts to develop animal models for brain AVMs, as in an embryonic model in quail embryos.

Clinical Research on Aneurysm and AVM Outcomes

An important part of my research program is the analysis of clinical outcomes with aneurysms and AVMs. The Barrow Registry for Aneurysm and Vascular Outcomes (BRAVO) and the UCSF Brain AVM Study Project with the Center for Cerebrovascular Research have dedicated research nurses to maintain the clinical database, and the Cerebrovascular Service maintains a similar database for aneurysms and other vascular neurosurgical procedures. With one of the busiest cerebrovascular services in the nation, I have the opportunity to evaluate the results of specific microsurgical techniques for a wide variety of vascular lesions and clinical situations. These efforts have led to publications on basilar artery aneurysms, thrombotic aneurysms, revascularization techniques, Spetzler-Martin grade III AVMs, and the effect of presenting hemorrhage on outcomes after AVM resection, to name a few. Multidisciplinary collaboration has enabled the integration of new endovascular techniques and analyses that demonstrate the beneficial effects of regionalized, high-volume centers like UCSF. In addition, I involve UCSF in nationwide clinical trials, such as the Carotid Occlusion Surgery Study (COSS).

Computational Fluid Dynamics

In collaboration with neuroradiology, we are developing computing techniques to measure the hemodynamics of brain aneurysms. Contrast-enhanced magnetic resonance imaging is used to calculate forces within aneurysms, shear stress on aneurysm walls, and complex flow patterns that are invisible to conventional MR imaging or angiography. We are applying these methods to a spectrum of aneurysm patients with typical saccular aneurysms, atypical dolichoectatic aneurysms, and dysmorphic arteries to understand the relationships between aneurysm morphology and hemodynamics. In addition, these methods enable me to rationally plan therapeutic interventions with clip reconstruction, parent artery occlusion, and/or bypass surgery. Computational methods are better than conventional imaging in determining whether a dolichoectatic aneurysm that is being managed conservatively is enlarging, which can then inform clinical decisions. This research will ultimately lead to novel ways of estimating aneurysm rupture risks, guiding clinical decisions, and planning treatments.

Selected Research Publications

Single-Author Textbooks

Lawton MT: *Seven Aneurysms: Tenets and Techniques for Clipping*. New York: Thieme Medical Publishers, Inc., 2010.

Lawton MT: *Seven AVMs: Tenets and Techniques for Resection*. New York: Thieme Medical Publishers, Inc., 2014.

Lawton MT: *Seven Bypasses: Tenets and Techniques for Revascularization*. New York: Thieme Medical Publishers, Inc., 2018.

Development of Arteriovenous Malformation Models

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Angiogenesis in Arteriovenous Malformations and Dural Arteriovenous Fistulae

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Clinical Research on Aneurysm and AVM Outcomes

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Lawton MT, Du R, Tran MN, Achrol AS, McCulloch CE, Johnston SC, Quinnine NJ, Young WL: The effect of presenting hemorrhage on outcome after microsurgical resection of brain arteriovenous malformations. *Neurosurgery* 56 (3): 485-493, 2005.

Lawton MT, Kim H, McCulloch CE, Mikhak B, Young WL: A supplementary grading scale for selecting patients with brain arteriovenous malformations for surgery. *Neurosurgery* 60 (4): 702-713, 2010.

Sanai N, Zador Z, Lawton MT: Bypass surgery for complex brain aneurysms: An assessment of intracranial-intracranial bypass. *Neurosurgery* 65 (4): 670-683, 2009.

Sughrue ME, Saloner D, Rayz VL, Lawton MT: Giant intracranial aneurysms: Evolution of management in a contemporary surgical series. *Neurosurgery* 69 (6): 1261-1271, 2011.

Lawton MT, Lang MJ: The future of open vascular neurosurgery: Perspectives on cavernous malformations, arteriovenous malformations, and bypasses for complex aneurysms. *Journal of Neurosurgery* 130 (5): 1409-1425, 2019.