SUN VALLEY
CEREBROVASCULAR CONFERENCE

The Expanding Frontier of Cerebrovascular Treatment

January 30-February 1, 2025

St Luke's

THE UNIVERSITY OF TENNESSEE HEALTH SCIENCE CENTER

UC San Diego School of Medicine

Presented by St. Luke's Neurosciences in partnership with the University of Tennessee Health Science Center and the University of California San Diego School of Medicine.

Photo courtesy of Sun Valley Resort

Welcome to the Sun Valley Cerebrovascular Conference

Welcome to SVCC 2025, and to the historic Wood River Valley! The goal for this meeting, from the start, has been to promote provocative discussion and informative education, while allowing for world-class recreation in a family-friendly environment. Now in our sixth year, we have once again assembled key opinion leaders from across the country to discuss cerebrovascular disease and stroke. The disciplines of neurology, neurosurgery, and neuroradiology are among those represented.

The meeting focuses on procedural treatments for cerebrovascular disease, as well as high-yield medical interventions. As will be demonstrated during our sessions, cerebrovascular is one of the most dynamic and progressive subspecialties in medicine. Mechanical thrombectomy for stroke is arguably the greatest medical achievement in a generation. Treatment of vascular malformations, subdural hematomas, and idiopathic intracranial hypertension is being rethought and redefined. Yet these advances are best appreciated when we examine the historical context in which they occurred. Thus, the meeting opens Thursday evening with accounts from neurology, neurosurgery, and radiology pioneers describing the development of novel and revolutionary ideas.

This sets the stage for Friday's focus on real-world solutions for patients who don't necessarily match the criteria on which many landmark trials have been based. Old debates will be revisited, competing treatment strategies argued, and less common scenarios considered. Saturday will focus on technology and systems of care. Discussion topics will include team structures, novel workflows, and technological advances coming to fruition.

Partnership with industry is not only critical to advancing devices and technology, but essential for putting on an educational conference such as this. We are grateful to the sponsors who have graciously supported our venture. Please make sure to visit with them during breakfast, breaks, and après-ski sessions to exchange ideas.

We trust you will take advantage of the free time each day! Sun Valley is known for alpine and Nordic skiing, but numerous indoor and outdoor family-friendly activities abound at the resort. Don't miss out on our social events, including an opening reception, daily après-ski refreshments, and horse-drawn sleigh rides at our "Star and Sleigh" closing reception. To take advantage of the mountain during the day, our meeting starts early! To help kickstart your day, we are hosting a coffee bar each morning. Stop by the Konditorei restaurant from 6:30-7:30 a.m. and show your badge to get your favorite morning beverage.

There are two additions to the meeting for this year. Due to a record number of abstract submissions, we are now incorporating poster presentations as part of our scientific program. Feel free to view posters at any time during the meeting in the Limelight A room. Posters will be judged during the Après-Ski Hour Friday and Saturday from 3-4 p.m. In order to foster "on mountain" networking and camaraderie, we are including helmet stickers in each welcome bag. Please utilize these so that fellow conference goers can identify other attendees!

A core principle of the meeting is that it is interactive; we strongly encourage audience participation in discussion, as well as in live polling. Lastly, please make sure to complete evaluations at the end of our meeting to help us make the 2026 Sun Valley Cerebrovascular Conference even better.

Sincerely,

Edward A.M. Duckworth, MD, MS, FAANS

Intended Audience

A conference for medical providers involved in the treatment of cerebrovascular disorders and stroke. The intended audience includes neurosurgeons, neurologists, neurointerventionalists and anyone involved with stroke care: primary care providers, emergency physicians, hospitalists, EMS providers, nurses and stroke coordinators.

Learning Objectives

- Review the history of treatments for cerebrovascular disease.
- Describe the latest management strategies for cerebrovascular disease.
- Discuss complex cases involving surgical, endovascular, and medical management of stroke and cerebrovascular disease.
- Analyze and discuss the optimization of stroke systems of care.

Conference Check-in

Thursday, January 30
Limelight Lobby at the Sun Valley Inn,
1:30-7:30 p.m.

Friday, January 31, and Saturday, February 1
Limelight Lobby at the Sun Valley Inn, 7-8 a.m. and 3-4:30 p.m.

SVCC WIFI Access

SSID: **SVCC2025**
Password: **SVCCBaldy**

Conference Organizing Committee

Dan Abenroth, MD

Andrei Alexandrov, MD

Anne Alexandrov, PhD, AGACNP-BC

Adam Arthur, MD, MPH

Edward Duckworth, MD, MS

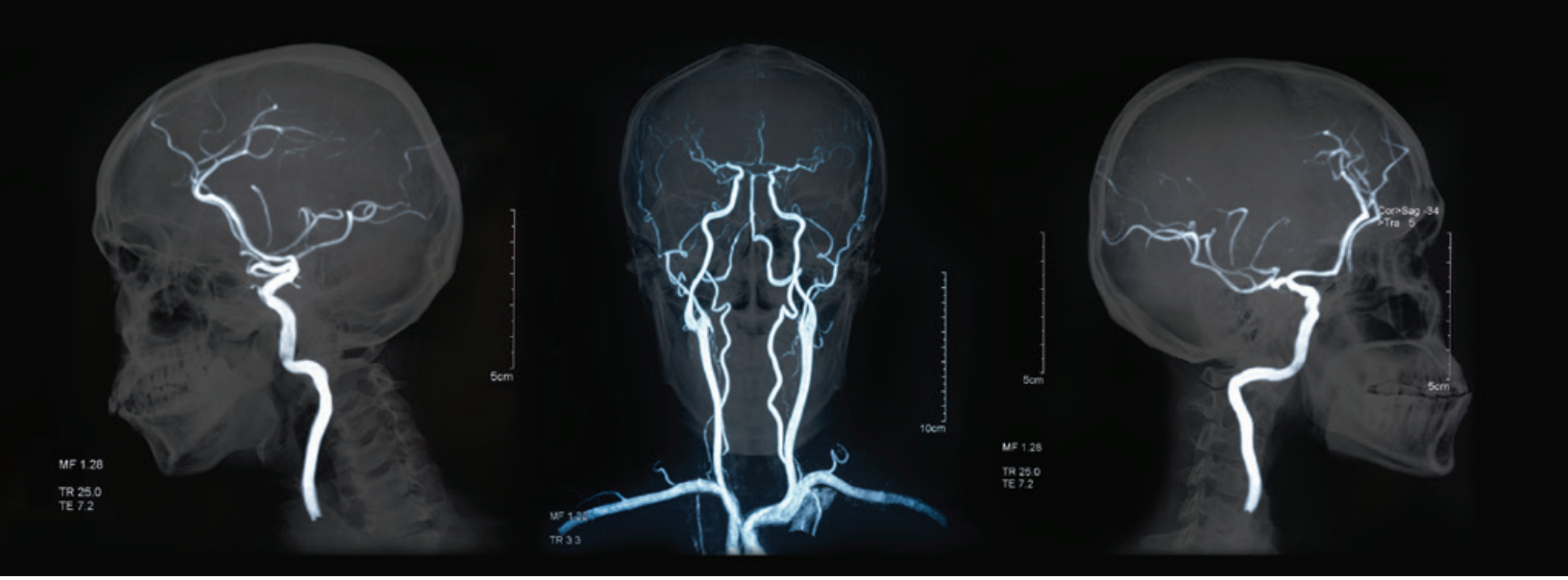
Lucas Elijovich, MD

Alexander Khalessi, MD, MBA

John Perl II, MD

Special thanks to the contributions of:

Aimee Borders
Traci Gluch
Kirk Rasmussen
Stephanie Shawver
Ben Slee
Shannon Smolar
Jennifer Walls



Scientific Program

The program is designed to be dynamic, with short lectures in the morning punctuated by roundtable discussions and abstract presentations. These are followed by case presentations, hot topics and head-to-head debates during the evening sessions. The meeting will cover the spectrum of cerebrovascular care, including discussions on the history of stroke, navigating difficult treatment scenarios, systems of care, and emerging technology and treatments for hemorrhagic and ischemic stroke.

All conference meetings will be held in the Limelight B room.

Thursday, January 30, 4-7 p.m.		
The Pioneer Mentality: Understanding Cerebrovascular Trailblazers *Moderator: John Perl II, MD*		
4-4:20 p.m.	Introduction and Welcome	*Edward Duckworth, MD, MS*
4:20-4:50 p.m.	Frazier's Legacy: The Forgotten Father of Neurosurgery	*Visish Srinivasan, MD*
4:50-5:20 p.m.	The History and Evolution of British Stroke Systems of Care	*Philip Bath, MD*
5:20-5:50 p.m.	Expanding Indications for Thrombectomy Since MR CLEAN: Where We Started & Where We are Headed	*Tudor Jovin, MD*
5:50-6 p.m.	**Break**	
6-6:30 p.m.	Changing Concepts and Treatments for Carotid Disease	*Robert Starke, MD, MS*
6:30-7 p.m.	The Evolving Role of the Neurologist: From General Neurology to Vascular Neurology to Neurointervention	*Andrei Alexandrov, MD*
7-8:30 p.m.	**Opening Reception**	

Friday, January 31, 7:30 a.m.-4 p.m.

Treatment Beyond the Trials

Moderator: Andrei Alexandrov, MD

7:30-7:53 a.m.	Treatment for Carotid Cavernous Fistulas	*J. Scott Pannell, MD*
7:53-8:04 a.m.	**Abstract 1:** Matched-pair Analysis of Endovascular Thrombectomy Cases for Anterior Circulation Ischemic Stroke Using Balloon Guide Catheters	*Michael Bounajem, MD*
8:04-8:15 a.m.	**Abstract 2:** Intracranial Stenting After Successful Recanalization in Patients with Intracranial Atherosclerosis Improves Outcomes-RESCUE-ICAS Secondary Analysis	*Sarah Nguyen, MD*
8:15-8:45 a.m.	**Roundtable Discussion:** Endovascular Therapy for Low NIHSS Stroke: "Lowering the Bar for Thrombectomy"	*Andrei Alexandrov, MD; Lucas Elijovich, MD; Dawn Meyer, PhD, FNP-C; Brian Jankowitz, MD; Eric Smith, MD*
8:45-9 a.m.	**Break**	
9-9:11 a.m.	**Abstract 3:** Automated Computer Vision Methods Provide Superior Basal Ganglia Hemorrhage Expansion Prediction	*Ahmed Kashkoush, MD*
9:11-9:22 a.m.	**Abstract 4:** Embolization of Spinal Csf Venous Fistulas: A Case Series with Review of Venous Anatomy, Endovascular Techniques and Current Literature	*Justin Costello, MD*
9:22-9:45 a.m.	Interventional Treatment of Head and Neck Venous and Lymphatic Malformations	*Imran Chaudry, MD*
9:45-9:56 a.m.	**Abstract 5:** Use of the Cardiac Navvus II Pressure Catheter for Cerebral Venous Sinus Manometry: Case Series	*Anqi Luo, MD*
9:56-10:07 a.m.	**Abstract 6:** Highly Eloquent Region Surgery Using a No-Contact Corridor, Remote Center-Of-Motion, and an Ultra-Low-Profile Laser	*Jinendra Ekanayake, MD, PhD*
10:07-10:30 a.m.	Imaging and Innovative Preventative Strategies in Small Vessel Disease	*Joanna Wardlaw, MD*
10:30 a.m.-3 p.m.	**Break**	
3-4 p.m.	Poster Presentations	*Moderated by SVCC Scientific Committee in Limelight A*

Friday, January 31, 4-7 p.m.

Interactive Case Presentations, Hot Topics, and Debates
Moderator: Alexander Khalessi, MD, MBA

4-4:18 p.m.	Interactive Case	*Jeff Steinberg, MD*
4:18-4:36 p.m.	Interactive Case	*John Perl II, MD*
4:36-4:57 p.m.	**Hot Topic:** Results of the ZODIAC Trial and Implications for Patients Transferred for Thrombectomy	*Anne Alexandrov, PhD, AGACNP-BC*
4:57-5:15 p.m.	Interactive Case	*Brett Meyer, MD*
5:15-5:33 p.m.	Interactive Case	*Eric Smith, MD*
5:33-5:54 p.m.	**Hot Topic:** Enhancing Thrombectomy Outcomes with Adaptive Pulsatile Aspiration (APA): The Role of Complete Clot Ingestion in Reducing Thrombectomy Time and Distal Embolization	*Robert Starke, MD, MS*
5:54-6:12 p.m.	Interactive Case	*Animesh Gupta, MD*
6:12-6:30 p.m.	Interactive Case	*Jay Howington, MD*
6:30-7 p.m.	**Head-to-Head Debate:** Indications for Thrombectomy: How Far Should the Envelope be Pushed	*Tudor Jovin, MD vs. Ramesh Grandhi, MD*

Saturday, February 1, 7:30 a.m.-4 p.m.

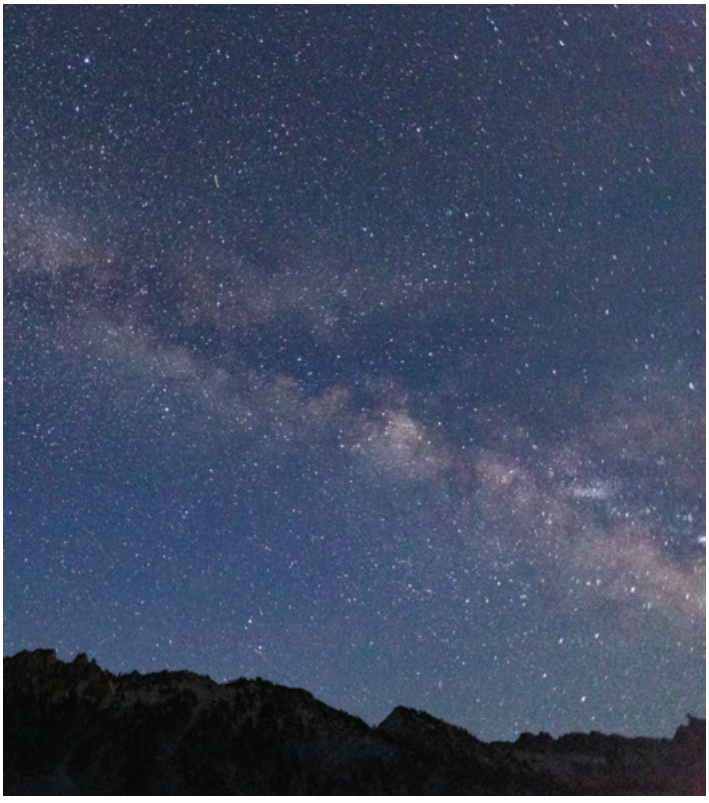
Systems and Technology to Improve Outcomes
Moderator: Adam Arthur, MD

7:30-7:53 a.m.	The Promise of Neuroprotection	*Marc Ribo, MD*
7:53-8:04 a.m.	**Abstract 7:** Multicenter Experience of Thrombectomy in Posterior Circulation Tandem Occlusions: Comparative Analysis of Procedural Techniques and Predictors of Clinical Outcomes	*Mohamed Salem, MD, MPH*
8:04-8:15 a.m.	**Abstract 8:** A Multicenter Implementation of Cervical Carotid MRI: An Ongoing Clinical Study by the DTECT Consortium	*Sheila Martinez*
8:15-8:45 a.m.	**Roundtable Discussion:** Balancing Enthusiasm for New Techniques and Technology with Conservative Patient Selection	*Adam Arthur, MD, MPH; Tudor Jovin, MD; J Mocco, MD, MS; Imran Chaudry, MD; Josh Abecassis, MD*
8:45-9 a.m.	**Break**	
9-9:11 a.m.	**Abstract 9:** Creating Successful Graphical Abstracts	*Stephen Graepel*
9:11-9:22 a.m.	**Abstract 10:** Effect of Race on Procedural and Clinical Outcomes in Middle Meningeal Artery Embolization for Primary and Adjunctive Treatment of Chronic Subdural Hematoma	*Cordell Baker, MD*
9:22-9:45 a.m.	Surface Modification of Neurovascular Stents: From Bench to Patient	*J Mocco, MD, MS*
9:45-9:46 a.m.	**Abstract 11:** Management of Recurrent Stenosis After Carotid Artery Stenting for Atherosclerotic Disease: Insights from a Multidisciplinary Stroke Center	*Sanjeev Sreenivasan, MD*
9:46-10:07 a.m.	**Abstract 12:** Long-Term Outcomes of Drug-Eluting Stents Versus Bare Metal Stents and Medical Management in Treating Symptomatic Intracranial Atherosclerotic Disease: A Multicenter Follow-Up Study	*Ramesh Grandhi, MD*
10:07-10:30 a.m.	Pharyngeal Electric Stimulation for Post Stroke Dysphagia	*Philip Bath, MD*
10:30 a.m.-3 p.m.	**Break**	
3-4 p.m.	Poster Presentations	*Moderated by SVCC Scientific Committee in Limelight A*

Saturday, February 1, 4-7 p.m.

Interactive Case Presentations, Hot Topics and Debates
Moderator: Dan Abenroth, MD

4-4:18 p.m.	Interactive Case	*Josh Abecassis, MD*
4:18-4:36 p.m.	Interactive Case	*Lucas Elijovich, MD*
4:36-4:57 p.m.	**Hot Topic:** The Expanding Role of tPA in Hemorrhagic Stroke Treatment	*Jay Howington, MD*
4:57-5:15 p.m.	Interactive Case	*Marc Ribo, MD*
5:15-5:33 p.m.	Interactive Case	*Brian Jankowitz, MD*
5:33-5:54 p.m.	**Hot Topic:** Endothelial Cell Biology and Intracranial Aneurysm Development	*Alexander Khalessi, MD, MBA*
5:54-6:12 p.m.	Interactive Case	*Imran Chaudry, MD*
6:12-6:30 p.m.	Interactive Case	*Travis Smith, DO*
6:30-7 p.m.	**Head-to-Head Debate:** APPs vs. Physician Residents to Support Stroke Team Operations	*Anne Alexandrov, PhD, AGACNP-BC vs. Andrei Alexandrov, MD*
7:30-9:30 p.m.	**Star and Sleigh Closing Reception** – Featuring horse drawn sleigh rides and star gazing; Adjourn & enjoy Sun Valley in the Continental Room!	



Continuing Medical Education (CME) Information: St. Luke's Health System designates this **LIVE** activity for a maximum of 14.00 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

St Luke's Health System is accredited by the Utah Medical Association to provide continuing medical education for physicians.

Claiming CME: You will be able to obtain a total of 14.00 CME credits for this conference. To receive all the credits offered you must complete the post conference evaluation.

Conference Attire: Mountain casual or ski clothing. Business attire discouraged.

Method of Instruction: Live programs with oral presentations and interactive discussions. We will be using Poll Everywhere for live audience participation:

- Download the Poll Everywhere app from the Apple or Google Play store.
- Access online at pollev.com/SVCC.
- Text SVCC to 22333.

Early Morning Espresso: Enjoy a complimentary espresso at the Konditorei Friday and Saturday mornings from 6:30-7:30 a.m. (must show your conference badge).

Breakfast and Refreshments: Enjoy breakfast each morning at 7 a.m. and après-ski refreshments each afternoon at 3 p.m. in Limelight C with the exhibitors.

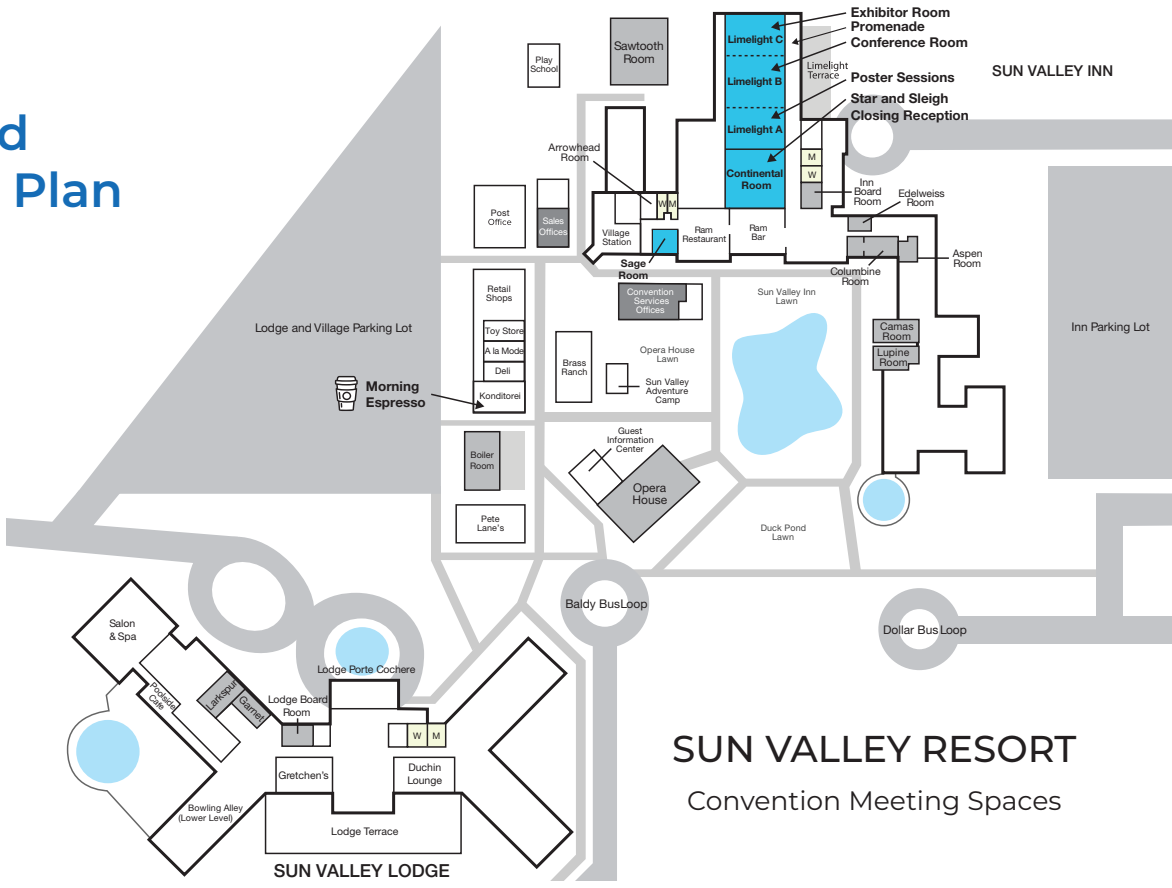
Conference Social Activities: In addition to providing an excellent educational opportunity at the Sun Valley Cerebrovascular Conference, we are hosting several recreational and interactive social events.

Access the post conference evaluation at https://forms.office.com/r/hPcfu8SR3m or scanning the QR code. Evaluation deadline is February 28th, 2025.

Conference and Exhibitor Floor Plan

SVCC WIFI Access

SSID: **SVCC2025**
Password: **SVCCBaldy**



Planned Social Events

Thursday, January 30
7 to 8:30 p.m. – Welcome reception with hors d'oeuvres and hosted bar in the Promenade and Limelight C.

Friday, January 31
3 to 4 p.m. – Après-ski with exhibitors and speakers in Limelight C.

Sponsored by Medtronic Neurovascular

Saturday, February 1
3 to 4 p.m. – Après-ski with exhibitors and speakers in Limelight C.

7:30 to 9:30 p.m. – Star and Sleigh Closing Reception in the Continental Room, featuring horse drawn sleigh rides, and star gazing.

Sun Valley Cerebrovascular Conference Recreational Activities

There are ample opportunities for fun and adventure in Sun Valley and at the Sun Valley Resort, including downhill skiing and snowboarding, snowshoeing and Nordic skiing. For those of you who don't want to tackle the snowy terrain, you can find cultural activities and shopping in Ketchum and other towns in the surrounding Wood River Valley.

To relax and rejuvenate, check out the heated swimming pools at both the Sun Valley Lodge and Sun Valley Inn or the spa at the Sun Valley Lodge.

For a comprehensive list of recreational opportunities, please visit sunvalley.com/things-to-do.

Discounted lift tickets: These can be purchased on the day of skiing from any Sun Valley Resort lift ticket retail outlet with a conference badge or other proof of identification.

Courtesy of Sun Valley Resort

Featured Speakers

Josh Abecassis, MD, is an ABNS board certified, cerebrovascular/skullbase neurosurgeon at the University of Louisville, where he is Assistant Professor in the Department of Neurological Surgery, the Director of the Cerebrovascular Program, and Director and Founder of the Louisville Cerebral Bypass Program. He sees and treats patients with the full spectrum of cerebrovascular disease, as well as patients with skull base tumors. He completed undergraduate and medical school studies at Northwestern University as part of the accelerated 7-year medical program. He completed a Howard Hughes Medical Institute research fellowship at the National Institute of Health during his time in medical school. He completed a residency in neurological surgery at the University of Washington, with an enfolded fellowship dedicated to complex cranial, skull base microsurgery for tumors, aneurysms, and other cerebrovascular diseases. He completed a post-graduate CAST accredited fellowship in endovascular neurosurgery at the University of Miami. He is a member of the American Association of Neurological Surgeons, Congress of Neurological Surgeons, Society of Neurointerventional Surgery, and the North American Skull Base Society.

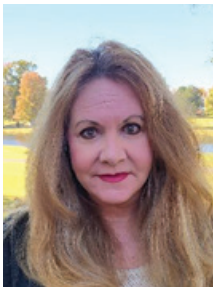
Andrei Alexandrov, MD, received his MD degree in 1989 from the 1st Moscow Medical Institute (Sechenov) and specialized in clinical neurology at the Institute of Neurology, Russian Academy of Medical Sciences, Moscow, Russia. He completed his fellowship training in stroke and cerebrovascular ultrasound at the University of Toronto with Dr. John W. Norris and at the University of Texas with Dr. James C. Grotta, and also received mentoring from Drs Dmitry K. Lunev, Patrick M. Pullicino and Sandra E. Black.

Dr. Alexandrov is listed among Banner Best Doctors by Phoenix Magazine 2024; by US News&World Report Best Doctors and America's Top Doctors in Neurology, 2011-14 and 5/5 ranking in 2020-21; by Castle Connoly as top 1% of specialists in Neurology in 2011-17, by Expertscape as World Expert (0.1% of scholars publishing in the past 10 years) in Stroke, 2019 and Expert, Ultrasonic Therapy, 2021.

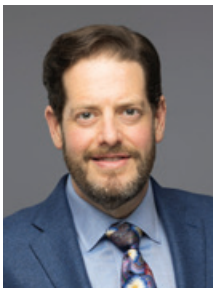
Dr. Alexandrov published 327 original papers, 3 textbooks, 16 case reports, 167 review articles, editorials, invited publications, and book chapters & over 350 abstracts presented at major scientific meetings and published in refereed journals. Current *h*-index 82.

Dr. Alexandrov has trained 62 fellows in stroke and cerebrovascular ultrasound. He served as Director of the Neurosonology Examination (1998-2018) and President of the American Society of Neuroimaging (2019-2021), Board member of the Intersocietal Accreditation Commission (IAC-Vascular, 2006-20, IAC-CT 2023-26), founding Editor-in-Chief, *Brain and Behavior* (2011-2015), past and present Editorial Board member of *Stroke, Cerebrovascular Diseases, International Journal of Stroke, Journal of Neuroimaging, S:VIN* (Senior Guest Editor), *Annaly Klinicheskoi I Experimentalnoi Nevrologii* and *Nevrologia* and past member of the Society of Vascular and Internional Neurology (SVIN) Board of Directors, and Program Committee, International Stroke Conference, American Heart Association. He is an active elected member of the American Neurological Association.

Dr. Alexandrov specializes in development of novel reperfusion therapies for stroke. As Chair of the University of Tennessee Health Science Center Neurology Department (2013-2023), he directed Mobile Stroke Unit, the first in the world equipped with state-of-the-art CT scanner performing head and neck CTA and accredited by IAC as CT laboratory, and created Memphis city-wide Neuro-critical Care, Epilepsy and Stroke Programs that achieved and sustained the highest per capita treatment rates with tPA and mechanical thrombectomy in the world in 2015-2022. In 2023, he became the inaugural Chair of the Department of Neurology, University of Arizona College of Medicine – Phoenix.



Anne Alexandrov, PhD, AGACNP-BC, ANVP-BC, FAAN, is a professor of both nursing and neurology at the University of Tennessee Health Science Center in Memphis. She is also the professor and program director for NET SMART at the Health Outcomes Institute in Fountain Hills, Arizona. Developed in 2007, NET SMART is the world's first and only post-graduate fellowship training program for advanced practice providers in acute stroke. Through this program, she has mentored more than 150 APPs from across the U.S. and internationally.



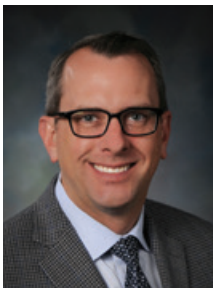
Adam Arthur, MD, MPH, attended college and medical school at the University of Virginia. During that time he joined the University of Virginia's Department of Neurosurgery and conducted research on aneurysms and cerebral vasospasm. He completed his internship and residency at the University of Utah, where he also completed an MPH with a focus on clinical trials methodology. After finishing his neurosurgery residency, he joined the Semmes Murphey Clinic and the University of Tennessee Department of Neurosurgery. During his first two years in Memphis, he completed a fellowship in endovascular and cerebrovascular neurosurgery.

Dr. Arthur is one of the first neurosurgeons in the country to develop a busy practice in both open cerebrovascular surgery and endovascular neurosurgery. He is the Past President of the Society for Neurointerventional Surgery and Past Chair of the Joint AANS/CNS Cerebrovascular Section. Now in his twentieth year in Memphis he is the James T. Robertson Endowed Professor and Chair of the Department of Neurosurgery at UTHSC and is also the Chair of the Neurosurgery Research and Education Foundation. He is currently leading six different large scale multicenter clinical trials and is actively engaged in developing and testing innovative strategies to improve patients' lives across a number of disease states.

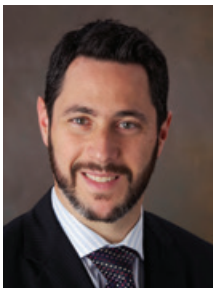
Philip Bath, FRCP DSc FMedSci, is Stroke Association Professor of Stroke Medicine, Head of Academic Stroke and Director of the Stroke Trials Unit at the University of Nottingham; an Emeritus National Institute of Health Research Senior Investigator; and a consultant stroke physician at Nottingham University Hospitals NHS Trust. He was the UK Stroke Association's Keynote Lecturer in 2015, the International Stroke Conference William M Feinberg Award Lecturer in 2016 and received Presidents' Awards from the British Association of Stroke Physicians in 2019, World Stroke Organisation in 2021 and European Stroke Organisation in 2023.

Prof. Bath is a clinical trialist with research interests in acute blood pressure management and antithrombotic therapy, treatment of post-stroke dysphagia, prevention of cognitive decline in cerebral small vessel disease/vascular dementia and use of artificial intelligence in stroke. He has >560 peer-reviewed publications. He was Chief Investigator of the TAIST (low molecular weight heparin, Lancet 2001), ENOS (glyceryl trinitrate, Lancet 2015), STEPS (pharyngeal electrical stimulation, Stroke 2016), TARDIS (triple-antiplatelet therapy, Lancet 2018) and RIGHT-2 (glyceryl trinitrate, Lancet 2019) multicentre phase-3 randomised controlled trials and leads the ongoing PhEAST phase-4 trial of pharyngeal electrical stimulation in post-stroke dysphagia. He coordinates international collaborations on acute stroke blood pressure management and optimising the design and analysis of stroke and cognition-related trials.

Imran Chaudry, MBBS, is a neurointerventional radiologist who completed his radiology residency at the Mercy Hospital of Pittsburgh, a Neuroradiology fellowship at University of Wisconsin and his Neurointerventional radiology fellowship at the University of Wisconsin and at the Medical University of South Carolina, Charleston. Dr. Chaudry was the fellowship director at MUSC. He is currently a Professor at the Medical University of South Carolina (Greenville, SC) and serves as program and fellowship director at Prisma Health Greenville, SC.



Edward Duckworth, MD, MS, is an intracranial-focused neurosurgeon specializing in the treatment of complex cranial disorders, including the surgical treatment of hemorrhagic and ischemic stroke. He is system director of neurosurgery for St. Luke's and a voluntary clinical professor at UC San Diego. Dr. Duckworth holds the distinction of being dual fellowship-trained: in open cerebrovascular and cranial base surgery at Northwestern University and in endovascular neurosurgery/ interventional neuroradiology at Semmes Murphey Neurologic and Spine Institute/ University of Tennessee Health Science Center. He has particular expertise in the treatment of complex aneurysms, arteriovenous malformations, carotid disease and cerebral hypoperfusion. He is the founder and director of the Sun Valley Cerebrovascular Conference.



Lucas Elijovich, MD, earned his bachelor's degree in biology from Tufts University and his medical degree from the University of Texas at Galveston. He completed his neurology residency at New York University, where he served as chief resident. He pursued advanced interests in cerebrovascular disease, neurocritical care and interventional neuroradiology, completing fellowship training in stroke and neurocritical care at the University of California, San Francisco.He then trained with Dr. Alejandro Berenstein, one of the pioneers of interventional neuroradiology,in New York. Dr. Elijovich joined Semmes Murphey Clinic in 2010 and is a professor in the Departments of Neurology and Neurosurgery at the University of Tennessee Health Sciences Center. He also serves as director of neurocritical care for the University and director of neurointerventional surgery and the Vascular Anomalies Center for LeBonheur Children's Hospital.

Ramesh Grandhi, MD, is an ABNS certified, dual-trained cerebrovascular neurosurgeon who treats vascular pathologies through both endovascular techniques and traditional, open microsurgical approaches. He has extensive experience with patients with cerebrovascular conditions such as arteriovenous malformations, brain aneurysms, and intracranial hemorrhages. In addition, he has a significant interest in treating patients with stroke and uses minimally-invasive approaches ranging from carotid and intracranial stenting to mechanical thrombectomy for large vessel occlusions. He received his undergraduate degree from Duke University and a master's degree in physiology at Georgetown University. Dr. Grandhi attended medical school at Virginia Commonwealth University and did his residency at the University of Pittsburgh Medical Center, where he completed an enfolded fellowship in Interventional Neuroradiology. He then completed a fellowship in Cerebrovascular Neurosurgery at the Baptist Neurological Institute in Jacksonville, Florida.

Animesh Gupta, MD, is a fellowship-trained neurologist and current neurohospitalist at St. Luke's Hospital System. He specializes in vascular neurology and clinical neurophysiology, having completed his vascular neurology fellowship at the University of California, San Diego, and his clinical neurophysiology fellowship at Dartmouth-Hitchcock Medical Center. Dr. Gupta previously completed his neurology residency at the University of New Mexico, where he was recognized as an exemplary teacher by medical students for three consecutive years.

Dr. Gupta is board-certified in neurology by the ABPN and holds additional certifications in Vascular Neurology and Clinical Neurophysiology. His extensive research has been featured in high-impact journals such as *Nature* and *The Proceedings of the National Academy of Sciences,* and he has contributed to numerous clinical trials, including NIH Stroke-Net studies. His research interests focus on stroke care optimization, neurovascular disorders, and innovative neurointerventional approaches.

Jay U. Howington, MD, completed his undergraduate work at Vanderbilt University and medical school at the Medical College of Georgia. After completing his residency at Louisiana State University and spending a clinical research year under the tutelage of Frank Culicchia (microsurgery) and Bob Dawson (interventional neuroradiology), he went to Buffalo with Nick Hopkins for two years. Upon the completion of his fellowship, he moved to Savannah to begin his practice and to work as an associate clinical professor in both the Departments of Surgery and Radiology at Mercer University as well as an assistant clinical professor in the Department of Neurosurgery at the Medical College of Georgia.

Dr. Howington became involved in organized neurosurgery through the American Association of Neurological Surgeons/Congress of Neurological Surgeons and the AANS/CNS Cerebrovascular Section, the Society of NeuroInterventional Surgery, the Neurosurgical Society of America and the Southern Neurosurgical Society, in which he just finished his tenure as president. He served on both the Young Neurosurgeons Committee and the Ethics Committee of the AANS; he currently serves on the Scientific Program Committee. He is a member of the American College of Surgeons and was elected as a governor; he serves both in that capacity as well as a liaison for neurosurgery. Dr. Howington is also a member of the U.S. Food and Drug Administration's committee that evaluates new neurological devices as they move through the FDA approval process.

Brian T. Jankowitz, MD, is a board certified neurosurgeon with a special focus on cerebrovascular surgery. He is CAST (Committee on Advanced Subspeciality Training) accredited in neuroendovascular surgery.

Dr. Jankowitz specializes in innovative treatments for ischemic and hemorrhagic stroke including carotid disease, intracranial stenosis, brain aneurysms, arteriovenous malformations (AVMs), and vascular malformations of the spine. He has extensive training in open and endovascular surgical procedures including CEA, TCAR, carotid stenting, aneurysm clipping, aneurysm coiling, and acute stroke interventions.

Prior to joining the Hackensack Meridian Neuroscience Institute at JFK University Medical Center, Dr. Jankowitz was the Division Head of Cerebrovascular Surgery at the Perelman School of Medicine at the University of Pennsylvania. He had previously served as the Director of the Cerebrovascular Program at Cooper Neurological Institute in Camden, New Jersey. He was also an associate professor of neurological surgery at the University of Pittsburgh School of Medicine and served as faculty of the UPMC Neurosurgery Department and UPMC Stroke Institute where he specialized in both open and endovascular neurosurgery.

Earning his bachelor of science degree from the University of Notre Dame, Dr. Jankowitz received his medical degree from Temple University School of Medicine. He then went on to complete his surgical internship, neurosurgical residency, and fellowship in Neuroendovascular surgery at the University of Pittsburgh Medical Center in Pittsburgh, Pennsylvania.

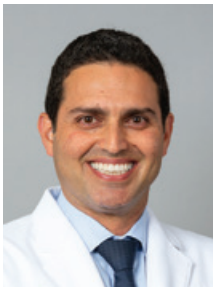
Dr. Jankowitz is a member of the American Board of Neurological Surgeons, the Society of NeuroInterventional Surgery and the American Heart Association. He is also a member of the Congress of the Neurological Surgeons and the Endovascular Neurosurgery Research Group, and holds editorial positions on several national medical publications including *The Spine Journal, World Neurosurgery, Neurosurgical Review, Interventional Neurology* and the *Journal of NeuroInterventional Surgery*. He is also a primary investigator for several national clinical trials.

Tudor G. Jovin, MD, is an expert in the interventional and non-interventional treatment for the entire spectrum of stroke and cerebrovascular disorders. He was one of the nation's first interventional neurologists, a medical subspecialty that uses minimally invasive technologies applied from within the vessels to diagnose and treat diseases of the arteries and veins of the head, neck, and spine such as acute stroke, carotid stenosis, intracranial aneurysm, and arteriovenous malformations.

In addition to his clinical experience, Dr. Jovin is known internationally for his research activities. He has served as principal investigator for several international clinical studies including REVASCAT, a randomized trial of endovascular therapy versus medical therapy for acute stroke within eight hours of symptoms onset conducted in Spain, and DAWN, a multicenter, international, randomized trial of endovascular therapy versus medical therapy in the beyond eight-hour time window. Both studies are considered landmark studies in the development of treatments for acute stroke and have been published in the *New England Journal of Medicine*. He is a member of the executive or steering committees for several multicenter national and international trials, and has participated as site principal investigator or co-investigator in multiple national and international trials.

Additionally, he serves as editorial board member for numerous medical journals. Dr. Jovin has published more than 300 articles in peer-reviewed journals or book chapters. The consequential nature of his research is evidenced by recently published studies that have identified Dr. Jovin as the highest impact author in the neuro-interventional field.

Prior to joining Cooper, Dr. Jovin was a professor of neurology and neurosurgery at the University of Pittsburgh School of Medicine and director of the Center for Neuroendovascular Therapy at the University of Pittsburgh Medical Center (UPMC). At UPMC, he also served as the director of UPMC's Stroke Institute, one of the leading centers for stroke care, education, and research in the world.



Alexander Khalessi, MD, MBA, is a board-certified neurosurgeon specializing in cranial and endovascular surgery. He provides both open surgical and catheter-based approaches to complex neurosurgical problems, including primary and metastatic brain tumors, cavernomas, aneurysms, arteriovenous malformations (AVMs), stroke, Moyamoya disease, and carotid disease.

Dr. Khalessi holds several global and national leadership roles. He was the most recent President of the Congress of Neurological Surgeons (CNS), the leading academic society for neurosurgical professionals. Dr. Khalessi will serve as Chair elect on the American Association of Neurological Surgeons (AANS)/CNS Washington Committee. He also sits on the Board of Governors for the American College of Surgeons (ACS) and the Board of North American Neuromodulation Society (NANS).

Dr. Khalessi has published more than 175 peer-reviewed papers and monographs, 250 abstracts and presentations, and served as principal or co-investigator of more than 25 clinical trials and grants. His research has spurred advances in treatment and surgical approaches for stroke, cerebral aneurysms, AVMs and more neurological conditions.

Dr. Khalessi earned his medical degree at Johns Hopkins School of Medicine and completed his neurosurgical residency at the University of Southern California. He obtained a bachelor's degree in public policy and master's degree in health services research from Stanford University, and holds a master's degree in business administration from Massachusetts Institute of Technology (MIT) Sloan School of Management.

Brett C. Meyer, MD, is a Stroke Neurologist and Co-Director of the Stroke Center at UCSD Medical Center, and is a Professor of Clinical Neurosciences in the Department of Neurosciences at the University of California, San Diego. He is the Clinical Director of Telehealth Operations for the UCSD Telehealth Program. He is Board certified in Neurology, and subspecialty Board certified in Cerebrovascular diseases, by the American Board of Psychiatry and Neurology. He specializes in acute cerebrovascular disease therapies and technological evaluation and treatment techniques as the Director of UCSD Stroke Telehealth network and initiatives.

Dr. Meyer's clinical research is varied, encompassing clinical stroke scale evaluations, acute and hyper-acute therapies for stroke, and Internet applications of telemedicine for the evaluation and treatment of stroke. Dr. Meyer was the Principal Investigator for an NIH-SPOTRIAS clinical trial assessing the use of telemedicine in acute stroke management. He is currently the PI of a Regional Coordinating Center for NIH StrokeNet, which is developing late phase stroke therapies for acute, prevention, and rehabilitation.

In his role as Clinical Director of Telehealth Operations, he is responsible for the clinical development, implementation, and medical oversight of numerous telehealth initiatives for primary care and all specialties throughout the entire health system and its external partners. Dr. Meyer has presented at major academic meetings, and has been published in numerous journals including *Lancet Neurology, Annals of Neurology, Stroke, Neurology, The International Journal of Stroke, The Journal of Stroke and Cerebrovascular Diseases, Academic Medicine,* and *Quality Management in Healthcare*.

Dawn Meyer, PhD, FNP-C, ANVP-BC, FAHA, is a Professor in the UC San Diego School of Medicine, Neurosciences Department and a member of the UC San Diego Stroke Center. She is a trained Vascular Neurology Nurse Practitioner and has been in practice for 22 years as a Stroke Hospitalist. She trained in Vascular Neurology at the University of Texas Health Science Center at Houston, completed her PhD at UCLA focusing on antiplatelets and sex differences in a preclinical model of stroke, and has been a faculty member in the UCSD School of Medicine for 14 years. She was the first to show that antiplatelet loading improved stroke behavioral outcome in a preclinical model of ischemic stroke. In 2013, she was elected as a Fellow to the American Heart Association and was certified as an ANVP-BC in 2023. She has published in top-tier stroke journals and has been a co-investigator in over 55 clinical stroke studies, site PI in 6 NIH studies, and PI of two NIH grants.

The overarching focus of her research is the interaction of platelet aggregation, sex differences, and acute stroke. Her daily clinical practice focuses on the acute diagnosis, treatment, and risk factor modification in ischemic stroke, transient ischemic attack, and intracerebral hemorrhage patients at UCSDs 2 Comprehensive Stroke Centers.

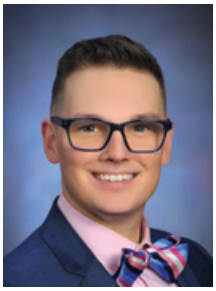
J Mocco, MD, MS, has dedicated his career to improving treatment options for acute stroke patients and advancing stroke systems of care. He serves on the Joint Commission Technical Advisory Panel for thrombectomy-capable stroke centers and sits on the American Heart Association/American Stroke Association Quality Accreditation Science Committee. Dr. Mocco also serves as an international primary investigator for THERAPY and COMPASS, two landmark trials evaluating aspiration thrombectomy for emergent large vessel occlusion. He has published over 500 peer-reviewed papers on stroke care, is the past chair of the American Association of Neurological Surgeons/Congress of Neurological Surgeons Cerebrovascular Section and is immediate past President, the Society of NeuroInterventional Surgery. Dr. Mocco received his medical degree from the Columbia University College of Physicians and Surgeons. He earned his Master of Science in biostatistics at the Mailman School of Public Health at Columbia University; he completed a residency in neurological surgery at the Neurological Institute of New York and a fellowship in endovascular neurosurgery at the University of Buffalo. He currently serves as a professor and senior system vice chair in the Department of Neurosurgery at Mount Sinai.

J. Scott Pannell, MD, is a board-certified endovascular surgeon and interventional neuroradiologist. He is the director of neurointerventional surgery in the Department of Neurological Surgery at UC San Diego Health. Dr. Pannell earned his bachelor's degree in chemistry from the University of Georgia, along with an additional American Chemical Society certification, and his medical degree from the Medical College of Georgia. He completed his fellowships in endovascular neurosurgery and neuroradiology at University of California San Diego School of Medicine; his radiology residency at the University of Alabama at Birmingham; and his internship at Emory University. As an associate professor in the Departments of Neurological Surgery and Radiology, Dr. Pannell instructs medical students, residents and fellows in both departments. He specializes in the minimally invasive catheter-based treatment of blood vessel disorders that can lead to hemorrhagic or ischemic strokes. He is currently involved in multiple National Institutes of Health and industry-funded research projects investigating cerebrovascular diseases and spinal pain disorders. Dr. Pannell has co-authored more than 50 peer-reviewed journal articles and more than 30 book chapters; he is also a reviewer for multiple journals, including *World Neurosurgery* and the *Journal of Neurointerventional Surgery*. He has given over 40 lectures and presentations at national meetings.

John Perl II, MD, is the director of neurointervention at St. Luke's and formerly served as its neuroscience medical director. He was instrumental in establishing the stroke program and the endovascular neurosurgical and interventional neuroradiology program for the health system. He completed his diagnostic radiology residency at the University of Alabama and his neuroradiology fellowship at the Cleveland Clinic Foundation. His neurointerventional radiology training was at the University of Wisconsin under one of the founders of neurointerventional therapies, Dr. Charlie Strothers. Prior to coming to St. Luke's in 2010, Dr. Perl worked at Abbott Northwestern Hospital in Minneapolis and at the Cleveland Clinic Foundation. In his previous roles, he was active in fellowship education and translational science as well as actively developed some of the neurointerventional tools that are still in use today.

Marc Ribo, MD, is an interventional neurologist from Hospital Vall d'Hebron in Barcelona that underwent a vascular neurology fellowship at University of Texas-Houston (2004-5). His research work over the last 20 years was focused on improving access and efficacy of reperfusion treatments for acute stroke. He has a special interest in coordinating acute stroke management at the prehospital setting, integrating prehospital scales, telemedicine systems and artificial intelligence based solutions. He is the Co-Pi of the RACECAT study. He also has a special interest in improving in hospital workflows such as direct transfer to angio-suite (CO-PI of the ANGIOCAT and WE TRUST studies) and neuroprotection in acute stroke (PI of APRIL trial). He contributed to the growth of endovascular treatment of stroke exploring new selection protocols and novel devices. He is the Co-founder of Anaconda Biomed and Nora Health.

Eric Smith, MD, is a fellowship-trained neurointerventional radiologist with expertise in minimally invasive procedures of the brain, head, neck and spine. He specializes in both arterial and venous approaches for the treatment of many cerebrovascular disorders including pulsatile tinnitus, idiopathic intracranial hypertension, spontaneous intracranial hypotension, cerebrospinal fluid venous fistulas, dural arteriovenous fistulas, arteriovenous malformations, stroke, brain aneurysms and other vascular disorders. Dr. Smith's other interests include neurointerventional robotics, treatment of congenital vascular anomalies, and MRI-guided, focused ultrasound for the treatment of movement disorders such as essential tremor and Parkinson's disease. After finishing his diagnostic radiology residency at the Medical College of Wisconsin, Dr. Smith completed diagnostic and interventional neuroradiology fellowships at the University of California, San Francisco.



Travis Smith, DO, is a neurohospitalist who provides care for the breadth of neurological diseases for inpatients. He is a board-certified vascular neurologist who specializes in the care of acute ischemic and hemorrhagic strokes, TIA, and other diseases of central nervous system vasculature. He also teaches medical trainees, and has interests in team-based approaches to medical care and inpatient neurology.

Visish Srinivasan, MD, is a comprehensive cerebrovascular neurosurgeon, with advanced training in both microsurgical/skull base techniques as well as endovascular techniques to treat cerebrovascular disorders. As director of the Kim Innovation Lab, his group performs translational research studying aneurysm healing, endovascular device development and testing, intravascular imaging, and intra-arterial therapy for tumors.

Robert Starke, MD, MS, is a member of the departments of Neurological Surgery, Neuroradiology, Pharmacology, and Neurosciences. He has a busy clinical practice performing more than 700 operations each year. He specializes in the treatment of cerebral vascular disease. Dr. Starke is currently a tenured Professor of Neurological Surgery and Radiology at the University of Miami MILLER School Of Medicine. Previously, he graduated magna cum laude with a B.A. from Princeton University and distinction in neuroscience. He obtained his medical doctorate from Albert Einstein graduating with distinction in clinical and translational research. He also obtained a Masters of Medical Science with distinction in neuroscience research as part of the National Institute of Health Clinical Research Training Program. He also completed a cerebral vascular research fellowship at Columbia University, which provided him with a wide background in epidemiology and statistics. Dr. Starke attended neurosurgery residency at the University of Virginia. He also completed endovascular neuroradiology fellowships at Thomas Jefferson University and University of Virginia and a cerebral vascular and skull base fellowship at Auckland University Hospital, New Zealand. He is board certified in Neurosurgery ABNS and certified by the Committee on Advance Subspecialty Training in Endovascular Therapies (CAST). His laboratory is supported by multiple grants including more than 3 million dollars from the National Institute of Health to study aneurysms. His research focuses on cerebral vascular pathophysiology. These avenues allow for the development of novel cellular, medical, radiographic, surgical, and endovascular techniques. He has co-authored over 700 academic publications. As the Director of Neurovascular Research, he helps run numerous clinical trials for minimally invasive treatment of cerebral vascular disease and brain tumors.

Jeffrey Steinberg, MD, is a neurosurgeon at UC San Diego Health who specializes in vascular diseases of the nervous system. Dr. Steinberg completed specialized training in both open and endovascular neurosurgery; this includes traditional open neurosurgical procedures, such as aneurysm clipping, as well as minimally invasive endovascular procedures, such as aneurysm coiling. He also specializes in cerebral bypass procedures. Dr. Steinberg completed his neurosurgery training and a fellowship in neuroendovascular surgery at UC San Diego School of Medicine. He spent additional time at Stanford Medical Center with a focus on open cerebrovascular neurosurgery and moyamoya disease. During his residency, he received the Kaiser Excellence in Teaching Award. Currently, he is the director of the neurosurgical resident skull base lab, where he has contributed to the development of a novel surgical technique for the treatment of trigeminal neuralgia. Dr. Steinberg has published numerous manuscripts in peer-reviewed journals and regularly presents at national conferences. He is a member of the American Association of Neurological Surgeons, Congress of Neurological Surgeons and the North American Skull Base Society.

Joanna Wardlaw, CBE, MD, FRSE, FMedSci, is Professor of Applied Neuroimaging at the University of Edinburgh, Foundation Chair in the UK Dementia Research Institute, and Consultant Neuroradiologist for NHS Lothian. Her work focuses on understanding the brain and its blood supply, and on treatments to improve blood flow to the brain, including thrombolytic drugs that are now in routine use to treat stroke, and more recently on treatments for small vessel disease and vascular dementia. Working with many colleagues, she has been instrumental in advancing understanding of the causes of cerebral small vessel disease and is now testing treatments in clinical trials. She has set up national research imaging facilities, co-ordinated international research networks, advanced stroke care worldwide and published over 1000 papers. A Fellow of the Royal Society of Edinburgh and of the UK's Academy of Medical Sciences, she has received awards from many UK and international brain and heart organisations, and was made a Commander of the Order of the British Empire (CBE) for services to Medicine and Neuroscience in 2016.

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Abstract Publications

Matched-pair Analysis Of Endovascular Thrombectomy Cases For Anterior Circulation Ischemic Stroke Using Balloon Guide Catheters.

Co-Authors: Diwas Gautam, BS[1]; Jackson Aubrey, BS[1]; Matthew Findlay, BS[1]; Julian Brown, BS[1]; Micheal Bounajem, MD[2]; Danielle C. Brown BS[3]; Manisha Koneru, MD[4]; Daniel Tonetti, MD[4]; Ramesh Grandhi, MD[2]

Background: Ballon guide catheters (BGC) have strong evidence base in support of their efficacy in enhancing endovascular thrombectomy outcomes for ischemic stroke. However, many neurointerventionalists remain hesitant to adopt them, potentially due to incompatibility of BGC with larger bore aspiration catheters. Aspiration catheter technology has evolved over time in terms of technique, materials and catheter size. Previous studies supporting the use of BGC were conducted prior to these advancements, and matched-pair analyses comparing BGC to non-BGC have also not adequately adjusted for these key differences. We provide an updated multi-center matched-pair analysis to assess angiographic and clinical outcomes for stroke thrombectomy using BGC versus non-BGC.

Methods: This multicenter, retrospective study analyzed 400 anterior circulation thrombectomy cases performed between February 2018 to February 2024. Of these, BGC cases were 1:1 matched with non-BGC cases by proceduralists, age, gender, use of stent retriever + aspiration device versus aspiration-only, site of occlusion, aspiration catheter size, and position of guide catheter.

Results: The BGC and non-BGC cohorts had similar demographic characteristics, including mean age (65.8 vs 66.7) and gender distribution (53.5% male vs 52.5%). The two groups had similar number of total passes (2.4 vs 2.5), first-pass effect (52.8% vs 52.5%), complications (6.5% vs 5.5%), and symptomatic intracranial hemorrhage rates (17.2% vs 15.5%). BGC cohort showed a significantly lower mRS at discharge (4.0 vs 3.6, p=0.03) and a higher percentage of patients achieving good clinical outcome at 30-day follow up (20.5% vs 30%, p=0.03). Rates of embolization to new territory (2% vs 3.5%), and mRS at 90-day (28 vs 30.5) were not significantly different between the two groups. Puncture-to-successful reperfusion time was significantly higher in BGC cases (23 minutes vs 31 minutes, p<0.001).

Conclusion: In this multicenter matched-pair analysis, the use of BGCs use is associated with improved functional outcomes at discharge and faster recovery in the early post-procedural period. However, no significant differences in radiographic outcomes were observed between BGC and non-BGC groups.

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Intracranial Stenting After Successful Recanalization in Patients with Intracranial Atherosclerosis Improves Outcomes – RESCUE-ICAS Secondary Analysis

Authors: Sarah Nguyen, Adam de Havenon, Eyad Almallouhi, Mohammad Jumaa, Violiza Inoa, Francesco Capasso, Michael Nahhas, Robert M. Starke, Isabel Fragata, Krisztina MIdovan, Shadi Yaghi, Ilko Maier, David Altschul, Jonathan A.Grossberg, Pascal Jabbour, Marios Psychogios, Edgar A Samaniego, Jan-Karl Burkhardt, Brian Jankowitz, Mohamad Abdalkader, Piers Klein, Ameer E. Hassan, Justin Mascitelli, Robert W. Regenhardt, Stacey Wolfe, Mohamad Ezzeldin, Kaustubh Limaye, Hosam Al Jehani, Nitin Goyal, Hafeez Niazi, Osama O.Zaidat, Colin P. Derdeyn, Thanh N. Nguyen, Sami Al Kasab, Ramesh Grandhi, and the RESCUE-ICAS investigators

Introduction: Intracranial atherosclerosis (ICAS) is estimated to cause 10-15% of large-vessel occlusions (LVOs) in stroke. The prospective Registry of Emergent Large Vessel Occlusion Due to Intracranial Stenosis (RESCUE-ICAS) demonstrated better outcomes in patients undergoing adjuvant acute stenting of the underlying ICAS plaque than in those who underwent endovascular thrombectomy (EVT) alone. We present a secondary analysis of RESCUE-ICAS in which we evaluated the safety and radiographic and clinical outcomes of acute stenting in patients with ICAS-LVO who had successful recanalization (modified treatment in cerebral infarction (mTICI) score≥2B).

Methods: RESCUE-ICAS was an international, multicenter, observational, prospective cohort study of 417 consecutive adult patients who underwent EVT secondary to ICAS-LVO, as defined by 50-99% stenosis or reocclusion after EVT. Patients who experienced successful recanalization (mTICI≥2B) at the end of thrombectomy and prior to stenting (in the stenting group) were included in this secondary analysis. Our primary endpoints were modified Rankin Scale (mRS) score at 90 days and 24-hour infarct volume on MRI. Safety endpoints included symptomatic intracranial hemorrhage and death at 90 days. Subanalysis of all patients who experienced mTICI≥2B after initial EVT alone prior to stenting was used to determine the impact of acute stenting on this cohort.

Results: A total of 351 (84.2%) patients in the total cohort had mTICI≥2B at the end of the procedure. Stenting was performed in 181 (51.6%) of these patients. The odds of functional independence at 90 days with mRS 0-2 was higher for those who acutely underwent stenting (adjusted odds ratio 1.88 [95% CI 1.09-3.26]; p=0.024). Patients who underwent stenting were more likely to have 24-hour MRI infarct volume <30 mL than those who underwent EVT alone (n=131, 70.1% vs 54.8%, p=0.022; adjusted odds ratio (aOR) 3.21 [95% confidence interval (CI) 1.46-7.07]; p=0.004). In our subanalysis, patients with mTICI≥2B who underwent acute intracranial stenting experienced a higher odds of mRS 0-2 at 90 days (aOR 2.19 [95% CI 1.01-4.74]; p=0.046) and 24-hour MRI infarct volume <30 mL (aOR 3.27 [95% CI 1.047-10.19]; p=0.042). There was no significant difference between the stenting and EVT alone groups in symptomatic intracranial hemorrhage (n=22, 7.2% vs 5.3%, p=0.466) or death at 90 days (n=85, 22.7% vs 25.9%, p=0.480).

Conclusions: Patients with ICAS-LVO who had successful recanalization (mTICI≥2B) at the end of the procedure and underwent stenting had lower mean infarct volumes on 24-hour MRI and better mean mRS at 90 days than those who had successful recanalization without stent placement. Further analysis also demonstrated that those who had mTICI≥2B after EVT alone who then underwent acute stent placement still had lower infarct volumes on 24-hour MRI and improved mRS at 90 days when than those who did not undergo stenting after successful recanalization. Our analysis suggests that acute stent placement in patients experiencing successful recanalization leads to better clinical and radiographic outcomes, without increased risk of morbidity and mortality.

Automated Computer Vision Methods Provide Superior Basal Ganglia Hemorrhage Expansion Prediction

Presenting Author: Ahmed Kashkoush, MD

Co-Authors: Robert Winkelman, MD; Rebecca Achey, MD; Mark Davison, MD; Varun Kshettry, MD; Joao Gomes, MD; Nina Zobenica Moore, MD; Mark Bain, MD

Introduction: Identifying patients at risk for basal ganglia hemorrhage (bgICH) expansion may improve selection criteria for early surgical evacuation or aggressive medical management. ICH artificial intelligence platforms can improve time to diagnosis and subsequently facilitate rapid triage. We aimed to develop and validate automated computer vision software that could extract and analyze imaging features to predict bgICH expansion from computed tomography (CT) scans.

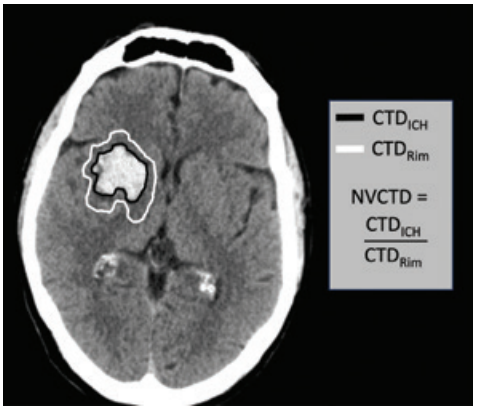

Figure 1. NVCTD calculation is performed by dividing the mean bgICH CT density (black) by the CT density of a surrounding 1-cm rim of surrounding parenchyma (white).

Methods: We custom-trained a convolutional neural network (CNN) to autonomously segment bgICH volumes from CTH and CTA images. Automated feature extraction included bgICH volume, spot-sign detection, and normalized volumetric CT density (NVCTD), which was calculated as the mean volumetric bgICH CT density divided by that of a 1-cm rim of surrounding parenchyma (Figure 1). CNN-segmentation and feature extraction was performed on the initial CTH and CTA in patients admitted to a single center between 2013-2014. Patients were excluded with <0.5-mL bgICH volume, underlying structural etiology (tumor, arteriovenous malformation, aneurysm), and presentation from ictus >24 hours. Multivariate logistic regression, using NVCTD, bgICH volume, and automated spot-sign detection as inputs, was utilized to predict hematoma expansion (HE), which was defined as a 10-mL increase in bgICH volume within 24 hours. Model prediction accuracy was measured using the area under the receiver operating characteristic curve (AUC) and compared to that of the BAT score, a previously validated HE prediction tool based on presence of ICH hypodensity (2 points), positive blend sign (1 point), and time to presentation from ictus <2.5 hours (2 points).

Results: Of 164 patients included (median age 62 years, 60% Caucasian, 59% male), HE occurred in 28 patients (17%) and was associated with increased initial bgICH volume (HE vs. no HE: median 23-mL vs. 11 mL, p<0.001), decreased NVCTD (2.1 vs. 2.2, p=0.009), and increased rate of automated spot-sign detection (43% vs. 9%, p<0.001). The specificity, sensitivity, and AUC of automated for manual spot-sign detection was 92%, 74%, and 0.83 (95% CI: 0.71-0.95), respectively. The AUC for multivariate modeling using automated CT feature extraction was 0.80 (95% CI: 0.71-0.90), which outperformed the BAT score (AUC 0.65 [0.55-0.75], p=0.019, z-test) for HE. Multivariate modeling using 100 unique 60%/40% training/test-set combinations demonstrated good generalizability of the automated computer vision model to unseen data (training set AUC =0.80, test set AUC = 0.80, p=0.931) (Figure 2).

Conclusions: Automated CT-based computer vision methods can improve bgICH expansion prediction and risk stratification.

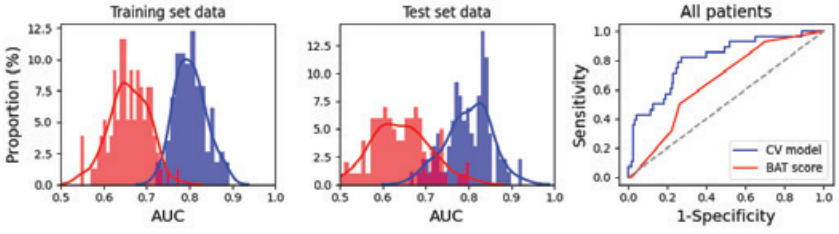

Figure 2. AUC curve distributions for the BAT score and computer vision multivariate model for 100 unique sets of training set data (left), test set data (middle), and all patients (right).

Embolization of Spinal CSF Venous Fistulas: A Case Series with Review of Venous Anatomy, Endovascular Techniques and Current Literature

Presenting Author: Justin Costello (UTSW CNS endovascular fellow)

Co-Authors: Lee Pride (UTSW faculty mentor), Elvira Allakhverdieva (UTSW CNS endovascular fellow), George Vilanilam (UTSW neuroradiology fellow), Edward Stehel (UTSW faculty)

Introduction: Intracranial hypotension due to spontaneous CSF leaks is an increasingly recognized disease entity [1,2] with significant morbidity and potential for superficial siderosis, or even comatose state if left untreated. [3-5] Low-flow leaks result from CSF-venous fistula (CVF) formation near the spinal foramen, and pose a specific challenge in diagnosis, requiring dynamic imaging techniques for precise localization of the CSF leak site. CVF management options include percutaneous fibrin injections and open surgical ligation, however both can be unfavorable due to a variety of factors, including treatment efficacy. [6,7] Endovascular embolization has emerged as a new minimally invasive method for CVF obliteration, with preliminary data showing a high cure rate and exceptionally low number of complications. [8-10] Through this case series, we present our initial experience with CVF embolization at an academic center, with an emphasis on outcomes, venous anatomy and procedural techniques.

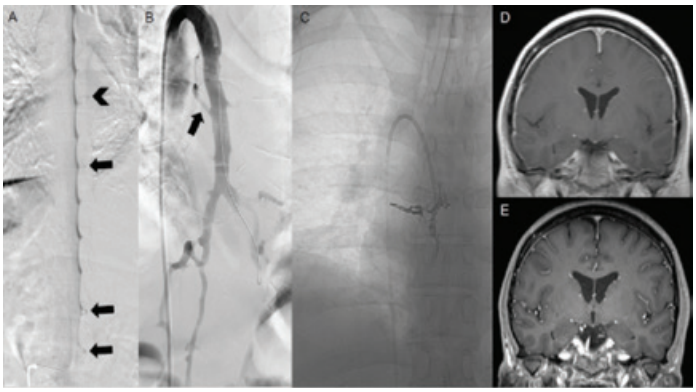

Figure 1. CVF evaluation and treament. (A) Digital subtraction myelogram shows normal CSF diverticulum (arrows) and right T7 CVF site (arrowhead) in this patient with symptomatic intracranial hypotension. (B) Azygous venography with variant venous anatomy. Right T7 foraminal vein drains inferiorly to a common segmental vein at T8 (arrow). (C) Post embolization with guide catheter in place. Note the dispersal of Onyx along the right T7 foramen and epidural space (more detailed images in presentation). (D) Pre-treatment and (E) post-treatment brain MRI with resolution of dural enhancement and brain sag (see suprasellar cisterns, more images in presentation).

Methods: Five consecutive patients are included in this study. All presented with symptoms of intracranial hypotension with a mean symptom onset to diagnosis of 12.5 months. Digital subtraction myelography was performed under general anesthesia to localize the spinal CVF sites. Patients were treated with transvenous endovascular embolization utilizing Onyx liquid embolic agent. Clinical and brain imaging follow-up was performed to determine treatment efficacy. Digital subtraction myelogram evaluation for initial diagnosis and endovascular treatment techniques are presented in detail, as well as a review of the literature, which remains limited.

Results: Technical procedure success was achieved in all patients, with variant venous anatomy encountered in 2 cases. Mean patient age was 58 years old (range: 53-64 years old) and three patients were female. Improvement in clinical symptoms was reported in all patients after treatment with a mean follow-up of 16.7 months (range: 2-38 months). Four patients had resolution of subdural collections and brain sag on follow-up imaging. There were no major complications, however one patient developed a brachial plexopathy related to arm positioning during the procedure, which resolved postoperatively with conservative management.

Conclusion: Transvenous endovascular embolization of CVFs is a new promising technique for the management of spontaneous intracranial hypotension, with procedural success relying heavily upon precise preoperative imaging localization of the CSF leak site and a knowledge of spinal venous anatomy. Further prospective studies regarding treatment efficacy and possible complications are warranted.

Use of the Cardiac Navvus II Pressure Catheter for Cerebral Venous Sinus Manometry: Case Series

Co-Authors: Anqi Luo, MD; Michael Gaub, MD; Stephen Maldonado; Matthew Webb, DO; Fadi Al Saiegh, MD; Justin R. Mascitelli, MD; Lee A. Birnbaum, MD

Introduction: Invasive venous manometry (VM) is routinely performed to confirm the presence of a trans-stenotic pressure gradient (TSG) prior to cerebral venous sinus stenting (VSS). Conventional neurointerventional microcatheters used for VM (Phenom 27, Medtronic; Excelsior XT-27, Stryker) involve over-the-wire setups with manometry performed with either a pressure wire or external electromanometer. We present our experience using the Navvus II Rapid Exchange FFR microcatheter (ACIST Medical Systems, Eden Prairie, MN, USA), a monorail pressure catheter (PC) with a built-in fiberoptic pressure transducer tip used in percutaneous coronary intervention, for cerebral venous sinus manometry assessments.

Methods: All consecutive patients undergoing VM with Navvus since its inception at our institution were identified from a prospectively collected, IRB-approved database. Patient demographics, procedural characteristics, outcomes, and complications were recorded. We analyzed Navvus efficacy and safety via technical success based on catheter navigability and manometry and catheter-related complications.

Results: Nine patients were included. Ages ranged from 10-66 years (median 43 years), and all were female. Indications for VM were assessment of idiopathic intracranial hypertension (100%) and pulsatile tinnitus (66.7%). Venous access was transbrachial (n = 7) or transfemoral (n = 2). Navvus reached the venous sinuses co-axial to guide catheters sized 5-8F and mounted on 0.014-inch microwires. Median procedure duration was 70 minutes (range 41-81 minutes) for standalone VM and 101.5 minutes (range 75-128 minutes) for VM with VSS cases.

Technical success was achieved in all cases. For navigability, Navvus tracked well across tortuous jugular bulb anatomy and stenotic segments in most cases. One severely stenotic segment could not be completely transversed, with only the pressure transducer tip gaining distal access. Maintenance of distal wire position with PC pullback enabled repeat venous pressure measurements without requiring multiple microwire transversals of stenotic segments. For manometry, venous pressure readings displayed minimal drift and were averaged over multiple cardiac cycles using the ACIST RXi workstation. In three cases, Navvus venous pressure readings were compared to competitor catheters. Navvus TSGs were 13, 7, and 6 mmHg compared to competitor TSGs of 12, 7, and 3 mm Hg, respectively. The decision to perform VSS was concordant between competing catheter VM outcomes in all cases. There were no catheter-related complications.

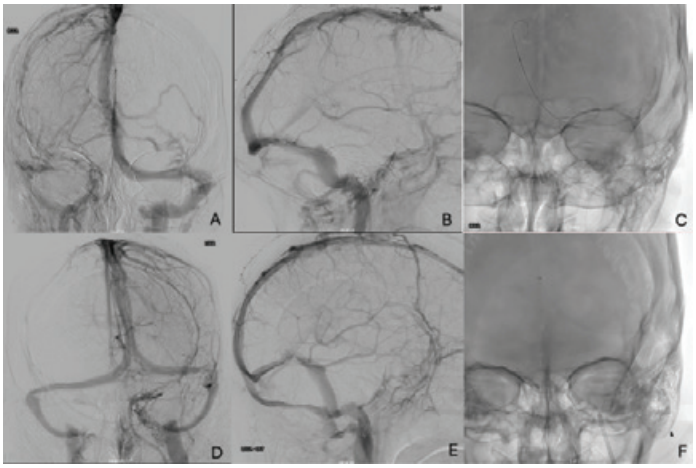

Figure 1. A, B, and D, E: AP and lateral views of standard venous phase DSA. C: A Navvus ACIST catheter with a 0.014" microwire are in the superior sagittal sinus F: 0.027" microcatheter is in the superior sagittal sinus.

Conclusion: Navvus II, a rapid-exchange cardiac pressure microcatheter, is safe and effective for use in cerebral venous sinus manometry procedures. Infrequent difficulty in navigation across severely stenotic segments and minimal differences in registered TSGs compared to conventional neurointerventional catheters are concerns.

Highly Eloquent Region Surgery using a No-Contact Corridor, Remote Center-Of-Motion, and an Ultra-Low-Profile Laser

Co-Authors: Ekanayake, Jinendra MD, PhD[1]; Steinberg, Gary K, MD, PhD[1]

Introduction: Highly eloquent and life-sustaining brain regions such as the brainstem, thalamus, internal capsule, basal ganglia, and hypothalamus present significant challenges for excision of embedded pathologies. Traditional microsurgical techniques, including bipolar-assisted removal under high-magnification operating microscopes (e.g., x10-12), are often unsuitable due to the absence of utilizable surrounding non-essential tissue. Innovations with minimally invasive tubular retractor systems, although promising, displace a large circumferential brain volume in creating a working channel. A less invasive, more precise microsurgical paradigm is therefore indicated for surgery in these critical regions.

We validated use of the Flexible Omnidirectional Carbon Dioxide Laser (FOCL) as an alternative to traditional microsurgical devices for lesion resection in highly eloquent regions in brainstem and basal ganglia. In the former, we demonstrated improved long-term clinical outcomes with the FOCL (p=0.02; 75 vs. 75 patients). We provide a detailed technical breakdown of a tailored microsurgical approach integrating FOCL with a precision surgical approach based on a single-center series of 124 surgical cases in highly eloquent brain regions.

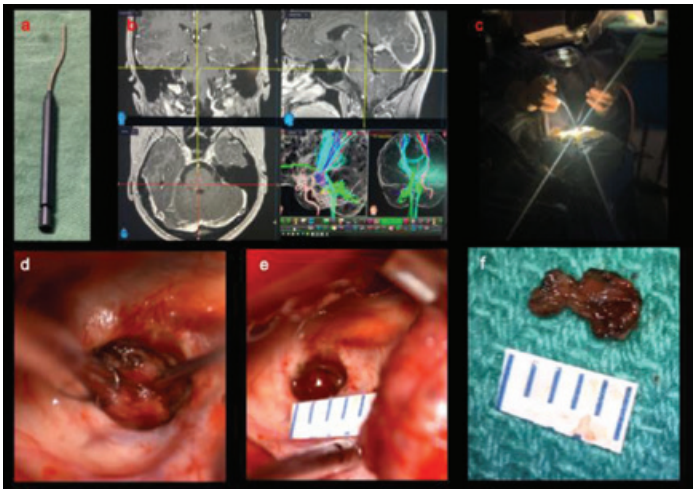

Figure 1. Illustrative surgical case. A) Omniguide CO2 laser holder; B) Intraoperative in-scope navigated view of dorsal pontine cavernous malformation; C) Intraoperative view of laser tip; D), E) 2.5mm cortical entry for surgical access; F) Excised cavernous malformation in-toto 4.5mm

Methods: We retrospectively analyzed 124 patients (Ages 3-79) who underwent FOCL-guided microsurgical resection of neurosurgical lesions termed 'highly eloquent' at Stanford Hospital between August 2010 and December 2024. These lesions, primarily cavernous malformations (120/124), were located in brainstem (102), basal ganglia (11), internal capsule (1), thalamus (4), and hypothalamus (2). The remaining 4 brainstem cases were respectively an AVM, an epidermoid cyst, a pilocytic astrocytoma and a hemangioblastoma. The OmniGuide CO2 Laser (Cambridge, Massachusetts) with microtip (0.55 mm) was utilized in all cases. Clinical outcomes were assessed using modified Rankin Scale scores. Surgical technique, including size of cortical entry and lesion, were analyzed using operative records and video assessments.

Results: Three critical surgical constraints were identified: (i) reduced direct visualization and haptics in narrow working channels, (ii) passage through critical regions, and (iii) resection of lesions through a minimal cortical entry. To address these challenges, we developed a modified remote center-of-motion (MRCM) approach, incorporating a no-touch constraint and non-mechanical circumferential dissection with a low-profile, pencil-grip, single shaft FOCL. Cortical entry size was, on average, 64% smaller (±14%) than the maximum diameter of the lesion, reflecting a reduced surgical footprint (see Figure 1 for illustrative case).

Conclusion: Improved safety and efficacy is achievable with FOCL combined with a no-contact MRCM approach to highly eloquent cortex lesions. This represents the largest consecutive FOCL case series, offering a precise, less invasive surgical solution for optimized outcomes in these regions.

Multicenter Experience of Thrombectomy in Posterior Circulation Tandem Occlusions: Comparative Analysis of Procedural Techniques and Predictors of Clinical Outcomes

Presenting Author: Mohamed M. Salem, MD, MPH, Neurosurgery Resident, University of Colorado Neurosurgery

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Introduction: Data on mechanical thrombectomy (MT) for posterior circulation tandem occlusions are limited to small single-center series.

Methods: We analyzed consecutive patients from 15 North American centers (2016–2023) who underwent MT for posterior circulation tandem occlusions. Inclusion criteria included intracranial VA, BA, or PCA occlusion (distal lesion) with tandem stenosis/occlusion of the extra-/intracranial VA (proximal lesion) causing impaired flow. Primary outcomes included successful recanalization (mTICI ≥2b), safety, and functional outcomes (90-day mRS).

Results: 123 patients were included (median-age 63 years, 37.4% females). Median initial NIHSS score was 17 (IQR 9-28); intravenous thrombolytics were used in 30% of patients (91.9% tPA; 78.9% under GA). Combined stent-retriever/contact-aspiration (SR/ADAPT) was the most employed strategy for distal lesion revascularization (36.6%), followed by stand-alone ADAPT (32.5%). Rescue stenting was used in 39% of procedures, more frequently in proximal lesions (35.8% vs 7.4%; p=0.01). Median last-known-well to groin puncture (LKW-GP) time was 357 minutes (IQR 210–778), with median puncture-to-recanalization (PTR) of 50 minutes (IQR 31–91). For distal lesions, mean number of passes was 1.5±1.1, while for proximal lesions, revascularization was attempted in 85.4% (mean 1.2±0.96 of passes), a likelihood increased with proximal-first (98.1% vs 74.6%; p<0.001) and dirty-road approaches (91.6% vs 63%; p<0.001). Successful revascularization occurred in 88.6% of procedures. In terms of complications, symptomatic ICH occurred in 8.9% of cases. Peri-procedurally, reocclusion, perforation, and dissection occurred in 4.1%, 4.1% and 2.4%, respectively. Favorable clinical outcome (90-day mRS 0-3) occurred in 47% of the patients, with 31.6% mortality rate. Distal-first approach PTR time was significantly shorter (p=0.018), with a lower post-MT symptomatic ICH (p=0.044), and a higher 90-day favorable mRS (0-3) (p=0.016), while utilizing the dirty-road was more significantly associated with rescue stenting (p=0.025). On multivariable regression, hyperglycemia, hypertension, pre-stroke higher baseline mRS, and higher presentation NIHSS predicted non-favorable 90-day mRS (p<0.05). Pre-stroke antithrombotics, procedures under MAC, successful reperfusion, and distal-first approach all predicted favorable 90-day mRS (p<0.05). There was a trend for utilizing the dirty-road and distal lesion lower passes number to be associated with favorable 90-day mRS 0-3 (p=0.06 and p=0.08; respectively).

Conclusion: MT for posterior tandem occlusions is effective, with reasonable outcomes despite frequent rescue stenting. In terms of procedural technique, favorable 90-day mRS might be linked to distal-first approach and proximal revascularization whenever feasible.

A Multicenter Implementation of Cervical Carotid MRI: An Ongoing Clinical Study by the DTECT Consortium

Presenting Author: Sheila Renee Martinez

Co-Authors: Scott McNally, MD, PhD; Rock Hadley, PhD; John Roberts, PhD; Seong-Eun Kim, PhD; Gerald Treiman, MD; Arunbalaji Pugazhendhi, PhD; Craig Weinkauf, MD, PhD; Kim-Lien Nguyen, MD; Yin-Chen Hsu, PhD; Maria Altbach, PhD; Kevin DeMarco, MD; David Saloner, PhD; Yibin Xie, PhD; Dimitrios Mitsouras, PhD; Vihbas Deshpande, PhD; Debiao Li, PhD; Dennis L Parker, PhD

Introduction: Introduction: Only through clinical research studies have providers had access to rich information obtained through magnetic resonance imaging (MRI) methods in assessing treatment management of carotid atherosclerosis. Unfortunately, these innovative imaging techniques have not breached the barrier into the realm of standard care, mostly due to lengthy exam time, interpretation learning curve for radiologists and practitioners, and associated costs. The Determining Type of Extracranial Carotid Atherosclerotic Tissue (DTECT) Consortium sets to address these limitations and ultimately shift the

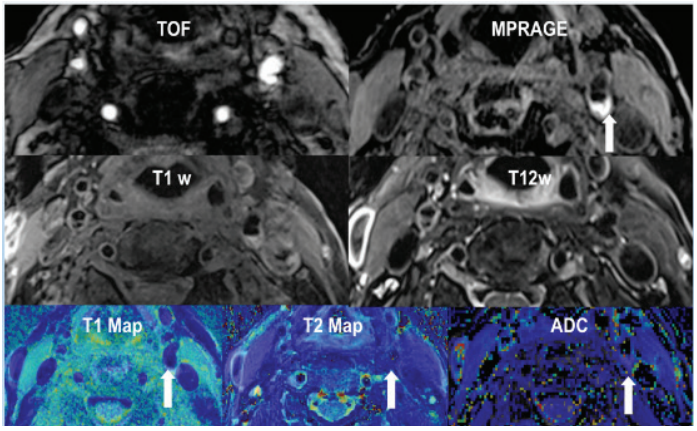

Figure 1: Participant with intraplaque hemorrhage (white arrows) scanned using our multiparametric protocol.

clinical paradigm by developing a highly efficient and user-friendly MRI protocol. We hypothesize that the management of cervical carotid disease can be optimized with novel MRI sequences coupled with the latest high signal to noise ratio (SNR) neck-shape-specific (NSS) radiofrequency coils and innovative machine deep learning (DL) analysis methods.

Figure 2: Neck Shape Specific (NSS) Radiofrequency Coil (a) developed at the University of Utah, capable of combining with vendor's head and neck coils (b). Compared to the vendor's lower SNR neck array (c), the NSS coil (d) shows up to a 400% increase in SNR for neck imaging.

Methods: Across five centers, symptomatic and asymptomatic adult patients with stenosis of >50% or plaque thickness of 4mm are undergoing an iterative MRI scan protocol composed of novel and conventional sequences with and without contrast using the NSS coil designed at the University of Utah (Figures 1 and 2). Quality checks are performed regularly on images, protocol sequences, and NSS coils. A supervised deep learning (DL) method for high SNR carotid imaging has been developed and is being applied to improve the image quality by detecting wall and plaque components from quantitative MRI (qMRI). For patients undergoing carotid endarterectomy (CEA), specimens are processed and aligned to in-vivo T1 and T2 qMRI data. The qMRI images are then correlated to histology to assess their ability to characterize plaque components (Figure 3).

Results: One hundred and thirty participants have been scanned. Of the 54 carotid MRI datasets that have been acquired for DL analysis, the DL approach qualitatively and observationally showed evidence of noise reduction: thus, improving image quality. The specimen qMRI data has provided distinct T1 and T2 values for identifying plaque components in atherosclerotic carotid plaques.

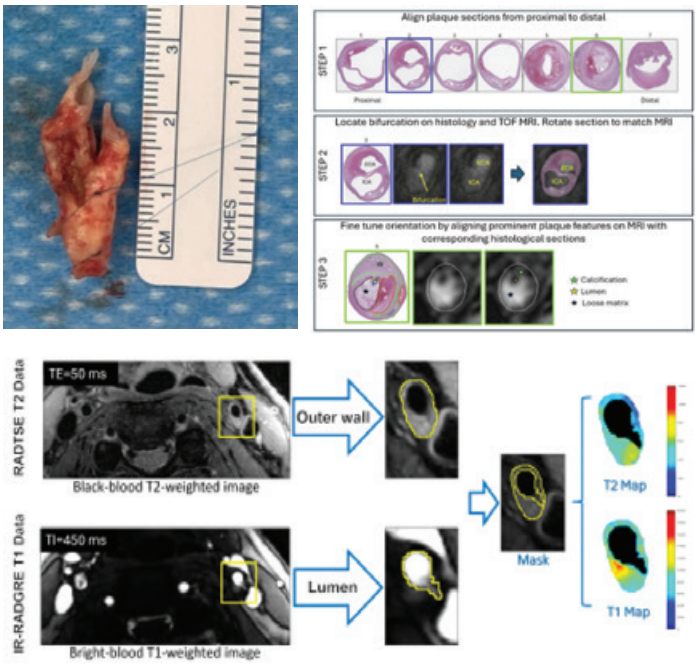

Figure 3: CEA Specimen (top left), Carotid Plaque Preparation (top right), Histology Correlation (bottom).

Conclusion: The results to date provide good evidence to support our initial hypotheses: 1) That MRI techniques can be made sufficiently repeatable and accurate to visualize properties of vulnerable disease in the cervical carotid artery, and 2) that analysis techniques can be made sufficiently robust allowing general application to centers capable of vascular imaging. The utilization of our integrated methods could enable earlier detection and intervention, potentially lowering stroke risk.

Creating Successful Graphical Abstracts

Presenting Author: Stephen P. Graepel

Introduction: If a picture is worth 1000 words, a 300-word abstract deserves one good picture. Graphical and Visual Abstracts have been documented to increase visibility and usage. But not any image will communicate effectively. There are rules to enhance abstract views and boost attention scores. During his 30-year career, Mr. Graepel has created over 7500 images for medical journals, presentations, and scientific publications. Mr. Graepel will share tips on how to successfully translate your research into a succinct graphic, catch the editor's eye, and reach your audience.

Additional information: Steve Graepel is a senior medical illustrator and assistant professor of neurosurgery with Mayo Clinic Neurosurgery. Prior to Mayo Clinic, Mr. Graepel worked as a visual strategist at Healthwise, Inc, a Boise-based patient information company dedicated to empowering people to make better health decisions.

Disclosure: The author has nothing to disclose.

Effect of Race on Procedural and Clinical Outcomes in Middle Meningeal Artery Embolization for Primary and Adjunctive Treatment of Chronic Subdural Hematoma

Presenting Author: Cordell Baker

Co-Authors: Santiago Gomez-Paz, MD; Mohamed M. Salem, MD, MPH; Cordell Baker, MD; Okkes Kuybu, MD; Georgios S. Sioutas, MD; Kate T. Carroll, MD; Mira Salih, MD; Adam A. Dmytriw, MD; Jane Khalife, MD; William Smith, MD; Diego Alejandro Ortega Moreno, MD; Robert W. Regenhardt, MD; Nicole M. Cancelliere, MD; Alejandro M. Spiotta, MD; Omar Tanweer, MD; Christopher J. Stapleton, MD; Michael Lang, MD; Vitor M. Pereira; Aman B. Patel, MD; Adnan H. Siddiqui, MD, PhD; Elad I. Levy, MD; Christopher S. Ogilvy, MD; Daniel Tonetti, MD; Ajith J. Thomas, MD; Visish M Srinivasan, MD; Brian T. Jankowitz, MD; Michael R. Levitt, MD; Bradley A. Gross, MD; Jan-Karl Burkhardt, MD; Ramesh Grandhi, MD

Objective: We investigated racial disparities in radiologic and clinical outcomes of patients after middle meningeal artery embolization (MMAE) for chronic subdural hematoma (CSDH) with or without evacuation surgery.

Methods: This multicenter retrospective study includes consecutive patients who underwent MMAE across 11 institutions. Patients were stratified into groups using self-reported racial data. Outcomes of interest were complications, treatment failure/reoperations, resolution of hematoma, and functional independence at last follow-up. Multivariable regression models were used to assess and adjust for relevant confounders.

Results: A total of 557 patients underwent 663 MMAEs, including 323 White (58%), 150 Black (27%), 35 Hispanic (6%), 29 Asian (5%) patients, and 20 patients (4%) self-categorized as other/nondisclosed. The median age (interquartile range) of the cohort was 75 (65-81) years, and 74% (412) of patients were female. MMAE was the primary treatment for CSDH for 369 patients (66%), and 188 (34%) patients received MMAE as an adjunct treatment. Black patients had a 51% lower likelihood of reoperation relative to all other racial categories (adjusted OR 0.49; 95% CI 0.25-0.95, p=.034). White patients were twice as likely to be independent at last follow-up (11% difference; adjusted OR 2.24; 95% CI 1.43-3.51, p<.001). Black patients were 59% less likely to be independent (6% difference; OR 0.41; 95% CI 0.25-0.69, p=.001).

Conclusion: This study highlights significant racial disparities in outcomes after MMAE for CSDH, with or without evacuation surgery. White patients had higher reoperation rates but were more likely to be functionally independent at last follow-up. Black patients, despite better baseline functional status, had lower odds of functional independence postoperatively.

Management of Recurrent Stenosis After Carotid Artery Stenting for Atherosclerotic Disease: Insights from a Multidisciplinary Stroke Center

Co-Authors: Sanjeev A Sreenivasan[1], Nicholas A Telischak[2], Robert L Dodd[1,2], Gary K Steinberg[1]

Introduction: Recurrent stenosis (RS) after carotid artery stenting (CAS) has been reported in 4.9-18 % patients at 1-74 months follow-up in literature. (1)(2) (3) (4)(5) (6) As there are no well-defined guidelines for management of RS and literature on long-term outcomes is lacking, it represents a challenging condition for neurovascular surgeons and interventionalists alike. Treatment options include repeat stenting with/without angioplasty or stent removal with carotid endarterectomy (CEA).

Methods: We retrospectively analyzed patients who were treated for RS, after prior CAS at our institute or an outside hospital (OSH). A prospectively maintained database was queried for demographic, clinical, radiological and angiographic details.

Results: Six patients were included in the study. Females were 50% (n=3). Median age was 76 yrs. All were hypertensive at baseline. Prior procedure consisted of 6 CAS in 5 patients (1 patient had two separate CAS on the same ICA) and 1 transcarotid artery revascularisation (TCAR) in 1 patient. Four (66.7%) patients had their initial CAS at OSH, and 2 at our institute. Four (66.7%) patients with RS presented with clinical deterioration, while 2 were asymptomatic. Angiographic progression of stenosis was noticed in 6(100%) patients. Median interval duration before repeat intervention was 5 months (range: 3d-5yr). Duplex ultrasonographic features of RS showed median values of CCA peak systolic velocity (PSV) 75 cm/s, proximal ICA PSV 247 cm/s, mid ICA PSV 139.5 cm/s, distal ICA PSV 171 cm/s and median ICA/CCA PSV was 4.3. Repeat stenting was performed in 2 (33.3%) patients: 1 with asymptomatic 60% RS and 1 with symptomatic 60-70% RS. Stent removal with CEA was performed in 4 (66.7%) patients: 3 presented with clinical worsening (new-onset stroke with limb weakness) and 99% RS, while 1 presented with asymptomatic 90% RS and opted for CEA. One patient underwent an extracranial-intracranial revascularization prior to CEA. Clinical (n=6) and angiographic (n=3, available) disease stability was reported in all (100%) patients at a median follow-up of 12.5 months (range 1-108 months) following their second procedure.

Conclusion: Post-stenting RS with new clinical symptoms may warrant stent removal with CEA, while asymptomatic RS may be managed with repeat stenting +/- angioplasty.

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Long-Term Outcomes of Drug-Eluting Stents Versus Bare Metal Stents and Medical Management in Treating Symptomatic Intracranial Atherosclerotic Disease: A Multicenter Follow-Up Study

Presenting Author: Ramesh Grandhi, MD[1]

Introduction: Intracranial atherosclerotic disease (ICAD) is a leading cause of ischemic stroke. Balloon-mounted drug-eluting stents (DES) have shown promise in the prevention of stroke recurrence in comparison to medical management (MM) and percutaneous angioplasty and bare metal stenting (PTAS) at both 30-day and 1-year follow-ups. This study aimed to evaluate the long-term outcomes of DES versus PTAS and MM in ICAD patients.

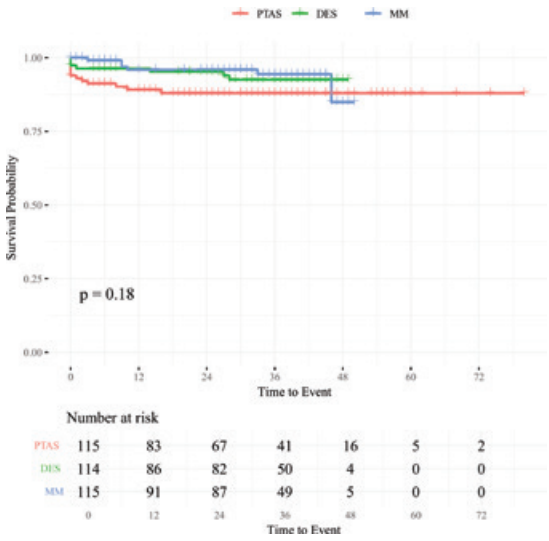

Figure 1

Methods: A retrospective multicenter study was conducted including patients who underwent stenting with DES for symptomatic ICAD between March 2018 and May 2023. Propensity score–matched control groups, representing MM and PTAS, were derived from the SAMMPRIS trial. Primary outcomes included recurrence rates of transient ischemic attack, stroke, intracerebral hemorrhage, and mortality. Time-to-event after the intervention was also evaluated. Analytical methods included univariate and multivariate binomial regression, Cox regression, and Kaplan-Meier survival analysis to evaluate the association between DES implantation and the outcome variables.

Results: A total of 115 patients who underwent DES implantation and two propensity-matched cohorts of 115 patients who received bare metal stents (PTAS) and aggressive MM were included. The mean follow-up was 27.9±17.0 months. The DES group demonstrated significantly fewer recurrent strokes (11.3%) compared with MM (27.0%) and PTAS (27.8%) (P=.003). The MM group experienced the lowest recurrence rate of intracerebral hemorrhage (0.9%), compared to 8.7% in the PTAS group and 4.3% in the DES group (P=.018). Multivariable regression controlled for demographics, comorbidities, and lesion

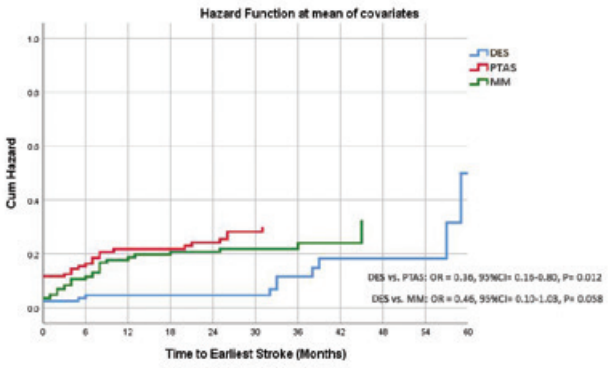

Figure 2

characteristics, revealed that DES was associated with reduced odds of recurrent strokes (OR=.40, 95% CI:.17-.92, P=.031) compared to PTAS throughout the follow-up. Kaplan-Meier survival analysis showed no significant difference in overall survival between the DES, PTAS, and MM groups (log-rank test, P=.180) (Figure 1). Multivariable Cox regression, controlled for the same variables, indicated that DES stenting lowered the hazard of recurrent strokes compared with PTAS (HR=.36, 95% CI:.16-.80, P=.012) (Figure 2).

Conclusion: Treatment of severe, symptomatic ICAD using DES was associated with lower odds of recurrent strokes compared with PTAS in this long-term follow-up study. Further pragmatic trials comparing MM with novel stent technologies are necessary.

Keywords: Drug-eluting stent, bare metal stent, intracranial atherosclerotic disease, stroke.

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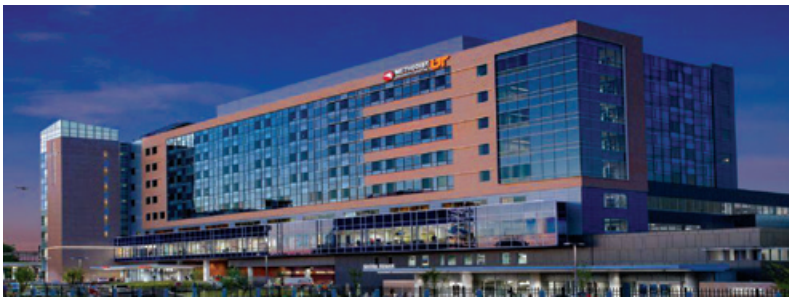
The University of Tennessee Health Science Center and Semmes Murphey Clinic

The University of Tennessee Health Science Center and Semmes Murphey Clinic partner to create one of the largest neurovascular groups in the country. The multispecialty program is shaped by the Memphis area community it serves, where the stroke rate is 37% higher than the national average, and utilizes a wealth of knowledge, experience and diversity of thought to fight the terrible damage stroke brings to patients and their families.

Covering five hospitals, the UTHSC/SMC cerebrovascular team's exceptional level of expertise is built through experience, handling one of the highest patient volumes in the United States. It delivers tPA and mechanical thrombectomy to the largest number of patients in the nation.

This environment enriches the quality of the neurology and neurosurgery residency programs and the numerous fellowship programs, which include vascular neurology, neurocritical care, open vascular and vascular neurosurgery; enhances the quality of the clinical research program with numerous NIH-funded research efforts; and provides the platform to develop ambitious solutions in stroke-care technology and methods. In 2016, the program deployed an IAC-accredited mobile stroke unit with advanced CT imaging capabilities, the first of its kind.



UTHSC/SMC's cerebrovascular team was also heavily involved in the clinical trials for the first deployment of the WEB Aneurysm Embolization System. The system boasts a significant improvement in safety and recovery time for aneurysm patients undergoing surgery.

With valuable lessons learned from caring for patients and dedication to world-class care, UTHSC/SMC's cerebrovascular team serves its community diligentlyand contributes to the advancement of knowledge and treatment.

THE UNIVERSITY OF TENNESSEE HEALTH SCIENCE CENTER

Neurological Surgery at UC San Diego Health

Delivering the Latest in Research-Informed Care

The UC San Diego Department of Neurological Surgery provides the full range of contemporary neurosurgical practice and delivers the highest-quality neurosurgical care to people around the world. In addition, our Center for the Future of Surgery—an international destination for state-of-the-art surgical training—serves as a clearinghouse for the research and development of new technologies.

National Recognition

We're proud to have earned several distinctions that make us a care destination, including:

- #21 in the nation for best neurosurgery and neurology care (U.S. News & World Report).
- #3 in the nation for quality (Vizient).
- First health organization in California to receive advanced certification in spine surgery by The Joint Commission.
- Region's only NCI-Designated Cancer Center.
- Level 4 Epilepsy Center.
- Region's first Level I Trauma Center.
- Two Comprehensive Stroke Centers.
- Region's only intraoperative MRI.
- World-class skull base surgery program.

Advanced Treatment Options

Our neurosurgeons are experts in using innovative technology and therapies to deliver the best possible treatment outcomes, including:

- Minimally invasive surgery.
- Intraoperative MRI.
- Robotic-assisted brain surgery.
- Stereotactic brain surgery.
- Awake brain surgery.
- Deep brain stimulation.
- Angiography and endovascular therapies.

UC San Diego
School of Medicine

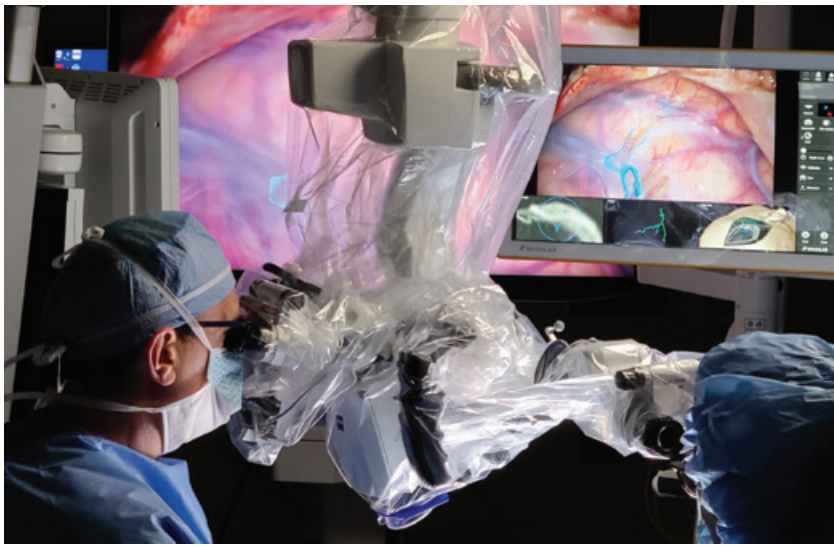
For more information, visit neurosurgery.ucsd.edu or follow us on Twitter or Instagram @UCSDNeuroSurg.

St. Luke's Cerebrovascular and Stroke Programs

St. Luke's cerebrovascular programs and physicians comprise the largest stroke system in Idaho, spanning nine medical centers. Three are Joint Commission Primary Stroke Centers, while the Regional Medical Center in Boise is designated as a Level 1 Stroke Center (Idaho Time Sensitive Emergency System). St. Luke's neurointerventional team possesses depth and breadth of endovascular neurosurgical experience including a dual fellowship-trained cerebrovascular neurosurgeon. St. Luke's was the first in the country to use the ZEISS Kinevo microscope and the first in the world to acquire the BK Activ intraoperative ultrasound platform, both of utilizing cutting-edge technology for open cerebrovascular surgical procedures. Neuroendovascular procedures are performed at both the Boise and Meridian Medical Centers. Our hub Boise hospital features the state-of the-art Siemens Icono biplane platform as part of an advanced hybrid neurovascular operating suite. St. Luke's utilizes a broad telestroke video capable network to provide acute stroke evaluation and treatment within each hospital's Emergency Department. The neurohospitalist team, including vascular neurology subspecialists, augments this Telestroke program systemwide and provides inpatient care in the Boise, Meridian, Magic Valley, and Nampa Medical Centers. In addition

to coordinating care across the St. Luke's system, the stroke program has strong collaborative relationships with numerous regional hospitals and EMS agencies to optimize patient care and timely transport.

St Luke's®



Please join us for the 2026 Sun Valley Cerebrovascular Conference, January 29-31. Register at www.sunvalleycerebrovascularconference.org

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SUN VALLEY
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