

Stereotactic and Functional NEUROSURGERY NEWS



Fall 2016

AANS/CNS Section on Stereotactic and Functional Neurosurgery and American Society for Stereotactic and Functional Neurosurgery

Editor: Sameer A. Sheth, MD,
PhD

Message from the President



Dr. Eskandar

The American Association of Stereotactic and Functional Neurosurgery (ASSFN), serves as an affiliate joint section of the AANS and the Congress

of Neurological Surgeons (CNS) and remains deeply involved

in a variety of educational, organizational and advocacy activities on behalf of North American functional neurosurgeons and our patients. It gives me enormous pride and pleasure to be the current president of the ASSFN.

The ASSFN recently held a very successful Biennial meeting in Chicago, in June. The 2016 ASSFN meeting showcased the progress and current state of stereotactic and functional neurosurgery with a stellar list of invited talks and concurrent sessions. Konstantin Slavin, MD, FAANS, was the meeting chair, and Joshua Rosenow, MD, FAANS, served as the local host. The topics covered were wide-ranging, including the most current approaches to the treatment of movement disorders, epilepsy, pain and neuropsychiatric disease. At the meeting, Ron Alterman, MD, FAANS, was elected secretary treasurer, Robert Gross, MD, PhD, FAANS, was elected vice president, and I assumed the role of president, following our now past president Aviva Aboosh, MD, PhD, FAANS.

Members of the ASSFN/Stereotactic & Functional Section have taken great advantage of the recent BRAIN Initiative from the Federal Government. The Defense Advanced Research Programs Agency (DARPA) has been a very generous supporter. One such initiative is the SUBNETS program to develop a closed-loop, next generation neuromodulation device for the treatment of neuropsychiatric disorders such as post-traumatic stress disorder, major depression and substance abuse. Another is the RAM

project to develop a neuromodulation device for enhancing memory. Members of the section are deeply involved in these projects and gave presentations at the recent ASSFN meeting on progress toward what are likely to be the next generation of neuromodulatory treatments for many new indications.

There are currently 375 members of the ASSFN, including 36 residents and fellows. This number is the highest it has been in years and reflects growing interest in our burgeoning multidisciplinary field. Society membership is now open and free to medical students. The Section is financially healthy and investigating ways to support our priorities in training, research and advocacy. One such example is the Roy Bakay Fund, which supports trainee research in stereotactic and functional neurosurgery and is run through the Neurosurgery Research & Education Foundation (NREF). We continue to work towards expanding our international footprint, and our section leadership was broadly represented on the program of the World Society of Stereotactic and Functional Neurosurgery (WSSFN) Meeting in Mumbai, India, in September 2015. In return, we encourage and actively solicit participation in our Section sessions from the leadership and members of our international partner societies.

As part of ongoing efforts to promote the training and education of residents, fellows and neurosurgeons in stereotactic and functional neurosurgery, the ASSFN held its 3rd Annual Hands-on Training Course in Stereotactic and Functional Neurosurgery, which moved from Atlanta to the University of Colorado Anschutz Medical Campus and was sponsored jointly by the ASSFN, NREF and AANS. Industry sponsorship was generous, and we were able to offer the course free to residents. Registration was capped at 31 people, with a waiting list generated for the next course scheduled for November 2016.

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Finally, ASSFN leadership continues to look for ways to broaden and deepen the engagement between our society and our current key industry partners with respect to our shared priorities of (1) patient care and access, (2) advancing the field through research, (3) training the next generation of practitioners and (4) the formation of joint task forces to tackle the obstacles associated with each of these priorities. A nascent registry effort in our subspecialty, sponsored by industry, is one such example.

Respectfully submitted,
Emad Eskandar, MD, MBA, FAANS
President, ASSFN

ASSFN Resident Social Hour During CNS Conference

Tuesday, Sept. 27, 2016 5:30-7 p.m.
Marriott Marquis, San Diego • Coronado Room

- 5:30 p.m.** Registration
Wine and Cheese
- 5:45-6:15 p.m.** Leadership Panel: Career Development Strategies in Stereotactic and Functional Neurosurgery
- 6:15-7 p.m.** Networking

We welcome residents and fellows interested in stereotactic and functional neurosurgery to an ASSFN event to hear a panel discussion from the experts about achieving career success.

The panel will discuss securing fellowships as well as faculty positions. There will be opportunities to network with functional neurosurgeons in various stages of their careers.

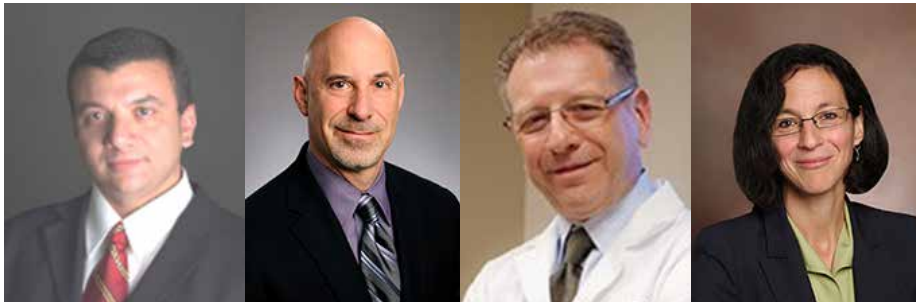
RSVP to assfn1@gmail.com by September 22

ASSFN Elections

Elections for officers and the Board of Directors for the American Society for Stereotactic and Functional Neurosurgery (ASSFN) were held during the Biennial Meeting in Chicago, on June 20, 2016. According to our organization's Constitution and Bylaws, officers serve a term of two years. Our new officers are as follows:

- President: Emad N. Eskandar, MD, FAANS, Massachusetts General Hospital, Harvard Medical School, Boston
- Vice president: Robert E. Gross, MD, PhD, FAANS, Emory University, Atlanta
- Secretary treasurer: Ron Alterman, MD, Beth Israel Deaconess Medical Center (BIDMC), Harvard Medical School, Boston
- Past president: Aviva Abosch, MD, PhD, FAANS, University of Colorado, Denver

Drs. Abosch, Eskandar and Gross were, respectively, president, vice president and secretary treasurer during their previous terms, from 2014-2016. Dr. Alterman is a professor of neurosurgery at Harvard Medical School and chief of neurosurgery at BIDMC. He received his medical degree from Albert Einstein College of Medicine in New York. Dr. Alterman completed an internship in general surgery at Washington University in St. Louis and a residency in neurosurgery at Montefiore Medical Center. He also received an MBA from Columbia University. Board certified in neurological surgery, his clinical interests include deep brain stimulation, epilepsy, tumor surgery and movement disorders.



Leadership of the ASSFN also includes the Board of Directors, comprised of ten elected members who serve a term of four years. Returning Board members include:

- Jorge Gonzales-Martinez, MD, PhD, Cleveland Clinic, Cleveland
- Clement Hamani, MD, University of Toronto, Toronto
- Peter E. Konrad, MD, PhD, FAANS, Vanderbilt University, Nashville, Tenn.
- Andre Machado, MD, PhD, Cleveland Clinic, Cleveland
- Alon Mogilner, MD, PhD, FAANS, New York University, New York
- Joseph S. Neimat, MD, MSc, FAANS, University of Kentucky, Lexington, Ky.
- Julie G. Pilitsis, MD, PhD, FAANS, Albany Medical College, Albany, N.Y.

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Three new Board Members were elected during the 2016 Biennial Meeting.



Jonathan Miller, MD, PhD, FAANS, Case Western Reserve University, Cleveland

Dr. Miller completed fellowship training with Kim Burchiel, MD, FAANS, at OHSU and subsequently joined the faculty at Case Western Reserve University where he is currently director of the Functional and Restorative Neurosurgery Center, associate professor/vice chair for Educational Affairs and

George R. and Constance P. Lincoln Endowed Chair. He is an associate editor in the Stereotactic and Functional Neurosurgery Section for the journal Neurosurgery and a regular participant in National Institutes of Health (NIH) and Department of Defense (DOD) review panels relevant to functional neurosurgery topics. Dr. Miller directs a CAST-approved functional and stereotactic neurosurgery fellowship.

Nader Pouratian, MD, PhD, FAANS, UCLA, Los Angeles

Dr. Pouratian is an associate professor of neurosurgery, bionengineering and neuroscience at UCLA, where he directs the Neuromodulation Program and the Peripheral Nerve Surgery Program. His research specifically focuses on in-depth exploration of brain mapping signals



(LFP, ECoG, DTI, fMRI) in order to characterize their clinical significance and utility in guiding patient-specific, efficient and effective neuromodulation. In addition to his service to the Congress of Neurological Surgeons (CNS) as vice-chair of Self-Assessment in Neurological Surgery (SANS) and on the education and scientific program committee, he serves on the CNS Editorial Board and on the SANS Advisory Board representing functional neurosurgery.

Sameer A. Sheth, MD, PhD, Columbia University, New York

Dr. Sheth is an assistant professor of neurosurgery at Columbia University, where he also serves as a faculty mentor in the Neurobiology Graduate Program and directs the Functional and Cognitive Neurophysiology lab and the Psychiatric Neurosurgery Service. His clinical interests are in epilepsy, movement disorders, psychiatric disorders and brain tumors. His research focuses on studying the neurophysiology of human cognitive control and decision-making using intracranial electrophysiological recordings. Dr. Sheth also serves on the Editorial Review Board of CNS SANS and the World Society for Stereotactic and Functional Neurosurgery (WSSFN) Psychiatric Neurosurgery Committee.



Coding and Reimbursement Update

Neurostimulator Implantation

In the 2014 Medicare Physician Fee Schedule (MPFS) Final Rule, an unidentified stakeholder raised questions about the practice expense (PE) for neurostimulator implantation codes 64553 and 64555. The Centers for Medicare & Medicaid (CMS) asked the RUC to value the PE and the work for these procedures. The codes were surveyed for the April 2015 RUC, but the RUC felt the codes should be referred to CPT for clarification of terminology of permanent and trial neurostimulator placement. At the February 2016 CPT meeting, several pain societies presented a proposal to revise CPT codes 64553, 64555, 64561 and to delete CPT code 64566. The panel felt the proposal was still too vague and that revision of other codes may be required and postponed the issue to time uncertain. At the May 2016 CPT meeting, the American Academy of Physical Medicine and Rehabilitation (AAPM&R) and the American Surgical Association (ASA) held an informal discussion to address panel concerns and suggested a review of all neurostimulator codes that use trial and permanent lead placement, including spinal cord and intracranial neurostimulators. Subsequently, neurosurgery reviewed the issue and suggested that updated data for 64553 and 64555 would support limiting the revised proposal to the original request from CMS and not an unwarranted expansion to other codes. As such, the American Association of Neurological Surgeons (AANS) and the Congress of Neurological Surgeons (CNS) drafted a CCP for review. The groups asked ASA to submit the proposal, as they are the dominant provider of the codes in question. The CCP was submitted on June 29, 2016, and will be presented at the September 2016 CPT Meeting.

Vagus Nerve Stimulation (VNS) Treatment for Epilepsy

On June 27, 2016, the American Epilepsy Society (AES) responded to the most recent version of a letter originally drafted by Jason M. Schwalb, MD, FAANS, and the AANS/CNS Stereotactic and Functional Section regarding criteria for VNS treatment for epilepsy. The issue was raised in response to overly restrictive criteria developed by Total Health Care, a Michigan Insurance Company, being used for coverage denials. AES agreed with much of the letter but recommended a number of changes, and several drafts have been exchanged. Payor coverage for neurostimulator

procedures may be the next topic for a future outreach project using the Policy Report software.

CMS Re-opens PILD Coverage

On May 13, 2016, the AANS and CNS submitted a letter to CMS in response to a notice regarding a request from Vertos Medical, Inc., for reconsideration of the current CMS policy to not cover percutaneous image-guided lumbar decompression (PILD) for lumbar spinal stenosis (LSS) except in a clinical trial. On April 13, 2016, CMS issued a reconsideration notice in response to the request. The letter from the AANS and CNS reaffirms previous concerns about PILD procedures and states that CMS should not widen the coverage for the procedure until 12 full months of clinical data are available and have been thoroughly reviewed. CMS will publish a Proposed Decision Memo on Oct. 13, 2016, with an additional 30-day comment period. The agency is expected to complete action on the reconsideration by Jan. 1, 2017.

RNS Neurostimulator Add-on Payment

CMS noted that it had granted two years of new technology add-on payments for the Neuropace Responsive Neurostimulator (RNS®) System. However, they are proposing to not grant a third year because the three-year anniversary date of the entry of the RNS System on the U.S. market (Nov. 14, 2016) will occur in the first half of FY 2017. The agency typically extends new technology add-on payments for an additional year only if the three-year anniversary date of the product's entry on to the U.S. market occurs in the latter half of the fiscal year. However, the agency has invited public comments on this issue. The AANS and CNS supported new technology payments for the device the last two years, and this was supported again in the aforementioned June 17, 2016, letter from the AANS and CNS to CMS.

*Donald Whiting, MD, FAANS
Allegheny Health Network*

ASSFN 2016 Awards

Congratulations to the following award winners at the 2016 American Society for Stereotactic and Functional Neurosurgery (ASSFN) meeting in Chicago. Awards were presented by Peter Konrad, MD, PhD, FAANS, during the award ceremony on June 21, 2016.

- Best clinical research poster by a resident/fellow: “Single Neuronal Correlates of Subjective Opinion in the Human Prefrontal Cortex” by Ziev Moses, MD, Brigham and Women’s Hospital, Harvard Medical School, Boston
- Best basic research poster by a resident/fellow: “Subcortical Targeting in Non-human Primates Using Magnetic Resonance Image Guidance” by Jessica Bentley, MD, University of Michigan, Ann Arbor, Mich.
- Peter J. Jannetta, MD, Award for best presentation in the field of Pain Surgery: “Role of Motor Cortex Stimulation on Neurotransmitter Concentration in the Periaqueductal Gray Area” by Emerson Magna de Andrade, MD, University of Sao Paulo, Sao Paulo, Brazil
- Best oral presentation by a resident/fellow: “Pathway Selective Deep Brain Stimulation Derived from Patient-Specific Models” by Kabilar Gunalan, MD, Case Western University, Cleveland

AANS 2016 Stereotactic and Functional Section Resident Award

Daniel R. Kramer, MD, the recipient of the 2016 Philip L. Gildenberg, MD, Stereotactic and Functional Section Award at the 2016 AANS Annual Meeting, is a fifth-year neurosurgical resident at the University of Southern California (USC). His project, “Producing Artificial Sensation through Cortical Stimulation in Humans,”



used cortical stimulation to produce artificial sensation in epilepsy patients with implanted electrocorticography grids under the guidance of Charles Liu, MD, PhD, FAANS, at USC and Richard A. Andersen, PhD, at the California Institute of Technology. Their team was able to reliably produce artificial sensation in all subjects, including nearly 100 percent accuracy on two tasks in which subjects located targets based on sensing the stimulation. By varying the parameters of stimulation, they were able to increase the intensity of the sensation, but no other subjective changes were noted. Future work will focus on thresholds for frequency discrimination, reaction times and recording from primary sensory cortex during actual sensation to decode the signal. Dr. Kramer plans to complete a post-graduate fellowship in functional neurosurgery and pursue an academic career in epilepsy and deep brain stimulation.

2016 ASSFN Biennial Meeting Wrap-up



Poster Session

The ASSFN meeting set the bar high for future poster sessions at neurosurgical meetings. Despite a history of poor attendance at such sessions in the past, the organizers and ASSFN executive committee turned a new leaf for interaction and discussion at the posters. A team of tour guides (Ron Alterman, MD; Chris Honey, MD; Ben Jonker, MD; Zelma Kiss, MD, PhD; Kendall Lee, MD, PhD, FAANS; Andre Machado, MD, PhD; Jonathan Miller, MD, FAANS; Julie Pilitsis, MD, PhD, FAANS; Nader Pouratian, MD, PhD, FAANS; Erich Richter, MD, FAANS; Phil Starr, MD, PhD, FAANS; and Peter Warneke, MD) carried flags to inform attendees where they were in the tour, moderated and acted as judges. Every presenter received questions and feedback on their research. Tour guides fostered discussion and put the work in context for the junior members. Thanks to dedicated poster-viewing time, engaged moderating faculty and the appropriate amount of lubrication, the ASSFN poster session was elevated to a highlight of this meeting and will lead to future meetings focusing on this important aspect of research communications.

Zelma Kiss, MD, PhD

University of Calgary, Calgary, Alberta, Canada

Epilepsy

Epilepsy surgery has always been a focus of the ASSFN, and the scientific program at the 2016 meeting continued this tradition. Epilepsy techniques were a major component of the resident practical workshop held on Saturday as well as the course on economics of functional neurosurgery the following day. The Plenary Session on Sunday afternoon and the parallel



The 2016 American Society and Joint Section of Stereotactic and Functional Neurosurgery (ASSFN) Biennial meeting, which took place in Chicago, from June 18-21, 2016, was a tremendous success. 571 people attended the meeting; 351 medical registrants and 220 exhibitors represented stereotactic and functional neurosurgery from all corners of the U.S. and 27 countries. The leadership committee included Aviva Abosch, MD, PhD, FAANS (ASSFN president); Konstantin Slavin, MD, FAANS (meeting chair); Joshua Rosenow, MD, FAANS (meeting co-chair, local arrangements chair); Peter Konrad, MD, PhD, FAANS (scientific program co-chair); and Brian Kopell MD, FAANS (scientific program co-chair). The meeting took place on the Magnificent Mile in the heart of downtown and was aptly kicked off by a historical revue of the city's landmark contributions to stereotactic and functional neurosurgery.

The scientific program consisted of parallel sessions with experts from around the U.S. and the world speaking on the latest developments in surgery for movement disorders, pain, epilepsy and psychiatric disorders. Of the 173 abstracts submitted, 47 were accepted for oral presentation and 107 for posters. These presentations, including a reconceived poster session, showcased cutting edge research in our technology-driven field. Overall, the meeting balanced broad-perspective plenary format talks with detailed subspecialty talks in a more intimate format. Honored guest Kim Burchiel, MD, FAANS, spoke to a packed house on his vision of the future of deep brain stimulation (DBS) surgery and also gave his perspective on trigeminal neuralgia treatment. Below are some of the meeting highlights.

Sameer A. Sheth, MD, PhD
Columbia University, New York

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scientific session on Tuesday morning included a number of expert presentations about neuromodulation, minimally invasive focal ablation, intracranial recording techniques and refinement of surgical approaches. Eleven oral abstracts were presented that included cutting-edge advancement in imaging, invasive electroencephalogram (EEG) analysis of network activity and improvement in clinical outcome. In addition, 10 posters about epilepsy topics were presented at the poster session. Altogether, epilepsy surgery was well represented and a prominent feature at the meeting.

*Jonathan Miller, MD, FAANS
Case Western Reserve University, Cleveland*

Movement Disorders

With DBS being one of the most successful neuromodulation therapies, neurosurgery for movement disorders continued to be a key topic this year. The meeting kicked off with two special courses covering the surgical technique, practical aspects of building a DBS program and economic factors at play. One plenary session and one parallel session were devoted to movement disorders, and there was an additional parallel session on neuroimaging in movement disorders. There was a combined 16 open papers presented at these sessions. The talks drew attention to the continued opportunity DBS for movement disorders provides to study the neuro-circuitry in a way that may inform future closed-loop stimulation technologies or further define the optimal target for clinical efficacy. In addition, there is growing interest in reassessing the role of ablative therapy, particularly through the use of focused ultrasound, and data from the recent pivotal trial was presented. In addition, research in gene therapy and novel methods for cellular transplantation remains were presented. Surgery for movement disorders will continue to provide an accessible platform to further our foundation of knowledge that will inform studies of other neurological disorders.

*Francisco Ponce, MD, FAANS
Barrow Neurological Institute, Phoenix*

Neuroimaging

Advances in neuroimaging technology and techniques resonated throughout the conference. We saw a trend towards the increasingly individualized localization of DBS and ablation targets in the fields of psychiatric neurosurgery, pain and movement disorders, with the incorporation of approaches such as tractography and improvements in MR structural and functional modalities. MR-guided laser interstitial thermal therapy (MRgLITT), with its increasing indications and recent long-term outcomes, was highlighted in several sessions and featured in the lunch seminar on Sunday. There was considerable excitement for the various presentations throughout the meeting highlighting the use of MR-guided high-intensity focused ultrasound to treat essential tremor in its incision-less targeting of deep nuclei and tracts.

A Monday morning general session was dedicated to advances in neuroimaging in the fields of pain and psychiatry, where topics such as neuroimaging and the placebo effect and the utilization

of DTI for targeting individual tracts in DBS for depression were presented. This session was followed by a parallel session focused on advances in the neuroimaging of movement disorders, during which presentations included novel MR sequences that improve the visualization and targeting of basal ganglia structures as well as the analysis of optimal imaging sequences for MRgLITT. Honored guest Kim Burchiel, MD, FAANS, delivered a moving lecture on Monday afternoon with a presentation focused on the utilization of intraoperative imaging modalities to refine techniques in DBS surgery. He presented recent outcomes using intraoperative computed tomography (CT) scanning to successfully guide an efficient, asleep, DBS-placement technique and highlighted the advancements that will carry into the future of the field.

*Sharona Ben-Haim, MD
UCSD, San Diego*

Pain

Pain continues to be a core part of neuromodulation and was highlighted extensively at the ASSFN meeting, beginning with Ken Follett, MD, PhD, FAANS, reviewing the Affordable Care Act-mandated Institute of Medicine report on “Relieving Pain in America,” to define the extent, impact and challenges of chronic pain in the U.S. A deeper dive into neurosurgical management of pain was provided in two separate plenary sessions on the second and third day of the conference. The plenary session emphasized three key themes, including (1) Why neurosurgeons should remain interested in the surgical management of pain, highlighting pain procedures that should only be done by neurosurgeons such as spinal lesioning and central neuromodulation for pain including DBS and MCS; (2) Emerging and changing concepts in surgical management of pain, including novel spinal cord stimulation modalities such as high frequency, burst and dorsal root ganglion stimulation; and (3) Peripheral nerve procedures, including decompression and stimulation for pain. Our honored guest, Dr. Burchiel, concluded the Pain Plenary Session and the entire meeting with a discussion of whether microvascular decompression should still be the first-line option for patients with trigeminal neuralgia. These sessions highlighted the diverse armamentarium of procedures and expertise that neurosurgeons have to offer to enrich this complex problem facing the U.S. and the rest of the world.

*Nader Pouratian, MD, PhD, FAANS
UCLA, Los Angeles*

Psychiatric Disorders

Coverage of neurosurgery for psychiatric disorders began with a full-day pre-meeting workshop organized by Joseph Neimat, MD, MSc, FAANS; Nader Pouratian, MD, PhD, FAANS; and Sameer Sheth, MD, PhD. The goal of the workshop was to bring together neurosurgeons, psychiatrists, neurologists, industry partners and representatives from the U.S. Food and Drug Administration (FDA) and the National Institutes of Health (NIH) to chart a path forward in the field of neuromodulation for psychiatric disorders. Early talks summarizing lessons learned from previous trials, relative advantages and disadvantages of clinical trials and

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registries, and the role of stimulation vs. lesion-based approaches set the stage. Critical perspectives were provided on regulatory considerations by Carlos Peña, PhD, MS, director of the Division of Neurological and Physical Medicine Devices at the FDA, and on funding opportunities by S. Holly Lisanby, MD, director of the Division of Translational Research at the National Institute of Mental Health (NIMH).

Industry representatives shared their perspectives during lunch, and much of the afternoon was spent discussing the development of imaging or physiological biomarkers as well as the relative merits of various trial and registry designs. Action points being pursued as follow-up from the discussion include creation of registry tools to gather data on these relatively uncommon procedures in a standardized fashion; creation of an internal ASSFN advisory board to guide future studies and liaise with the FDA; author a paper discussing clinical trial designs from the perspective of psychiatric neurosurgery; reach out to psychiatry groups to build relationships and share resources and develop ideas for biomarkers that can be used to assess target engagement and response. Anyone interested in assisting with these endeavors should contact any of the organizers listed above.

The meeting itself contained a plenary session on Sunday, June 19, addressing future directions to pursue within this field, new targets and even the role of non-invasive neuromodulatory techniques such as transcranial magnetic stimulation (TMS). Selected abstracts covered a range of emerging topics from target refinement to computational modeling to advanced imaging techniques. A separate session on Monday, June 20, focused on the intersection of psychiatry and neuroimaging, a critical avenue to explore for understanding the circuit bases of these complex disorders.

*Sameer A. Sheth, MD, PhD
Columbia University, New York*



PA = Pain

PRACTICAL COURSE

SYM02: Spinal Cord Stimulation: The Transformation

LUNCHEON SEMINARS

M14: Functional Neurosurgery: Emerging Opportunities

T17: Trigeminal Neuralgia Management Update

Pain Section Sessions and Oral Presentations occur Monday and Tuesday

SF = Stereotactic and Functional

PRACTICAL COURSE

PC27: Laser Ablation Surgery: Opportunities, Indications, Technique, and Outcome

LUNCHEON SEMINARS

M14: Functional Neurosurgery: Emerging Opportunities

W42: Epilepsy: Current and Emerging Treatment Strategies

AFTERNOON SESSION

Clinical Controversy Session 3: Epilepsy Associated Cavernomas

Stereotactic and Functional Section Sessions and Oral Presentations occur Monday and Tuesday



SUNDAY, SEPTEMBER 25

PROGRAM HIGHLIGHTS

SYMPOSIUM 02

PA SP 8:00 am–4:00 pm

Fee: \$300

NEW!

SYM02: Spinal Cord Stimulation: The Transformation

COURSE DIRECTORS: Nandan Lad, Jennifer Sweet, Ashwini D. Sharan

FACULTY: Jeff Arle, John Chae, Milind Deogaonkar, Steven Falowski, Andre Machado, Jonathan Miller, Richard North, Erika Petersen, Ali Rezai, Joshua Rosenow, Jason Schwalb, Konstantin Slavin

COURSE DESCRIPTION: New data and technologies are rapidly changing the field of Spinal Cord Stimulation. Historically, this technology has been utilized for management of spinal pain for over three decades. Today, there are new technology releases occurring every year. These have included changes in the understanding on paradigms in the frequency of stimulation, target structures such as the dorsal root ganglion, and the emergence of new tools. This symposium includes a collection of experts to update the attendee on all these revolving changes.

SF 12:30–4:00 pm

Fee: \$450

PC27 Laser Ablation Surgery: Opportunities, Indications, Technique, and Outcome

COURSE DIRECTOR: Daniel Curry, Shabbar F. Danish

FACULTY: Jonathan R. Jagid, Adrian Walter Laxton, Eric C. Leuthardt, Claudio Esteves Tatsui

COURSE DESCRIPTION: MR-guided laser ablation is rapidly emerging as minimally invasive alternative for the treatment of epilepsy, metastatic tumors, radiation necrosis, cavernous malformations, and other intracranial pathology. In this course, we will review techniques, applications, and outcomes to illustrate the gaps that this emerging technology can fill for neurosurgeons and prospective patients.



MONDAY, SEPTEMBER 26

PROGRAM HIGHLIGHTS

Luncheon Seminars

SF

NEW!

M14 Functional Neurosurgery: Emerging Opportunities

MODERATOR: Peter Konrad

FACULTY: Aviva Abosch, Kelly D. Foote,
Casey H. Halpern, Nader Pouratian

LEARNING OBJECTIVES: *Upon completion of this course, participants will be able to:*

- Identify emerging treatment strategies in functional neurosurgery.
- Describe different treatment techniques in functional neurosurgery.
- Summarize the importance of a multimodality approach to functional neurosurgery patients.
- Introduce recent technological advancements in functional neurosurgery into their practice.

PA

SECTION ON PAIN

MODERATORS: Jason M. Schwalb,
Mohammed F. Shamji

LEARNING OBJECTIVES: *Upon completion of this course, participants will be able to:*

- Describe different stimulation paradigms of spinal cord stimulation for pain and their putative modes of action.
- List important areas for further knowledge development and research in the neurosurgical treatment of pain.
- Identify important ongoing clinical trials.

3:15–4:03 pm

Advances in Spinal Cord Stimulation

3:15–3:35 pm

Mechanisms of High Frequency SCS Examined with Computational Models

Scott Lempka

3:35–3:55 pm

Burst and High Frequency Spinal Cord Stimulation

Sven Vanneste

3:55–4:03 pm

Discussion and Questions

4:03–4:45 pm

Oral Presentations

SP

PA

NEW!

M10 Spinal Cord Stimulator for Back and Leg Pain: Show Me the Evidence

MODERATOR: Andre Machado

FACULTY: Jonathan Miller, Alon Y. Mogilner,
Sean J. Nagel, Chengyuan Wu

LEARNING OBJECTIVES: *Upon completion of this course, participants will be able to:*

- Outline the diagnostic workup and indications for a patient with back and/or leg pain who may benefit from spinal cord stimulator.
- Describe the surgical techniques for placement of a spinal cord stimulator.
- Summarize the outcomes for patients who receive a spinal cord stimulator.
- Apply these research findings to identify the subset of patients in their own practice who may benefit from spinal cord stimulation.

SF

SECTION ON STEREOTACTIC AND FUNCTIONAL NEUROSURGERY

MODERATORS: Emad Eskandar, Parag Patil

LEARNING OBJECTIVES: *Upon completion of this course, participants will be able to:*

- Describe a novel technology to improve memory through neurosurgical intervention.
- Describe a novel technology to animate paralyzed limbs through neurosurgery.
- Describe recent advances in functional neurosurgical research.
- Apply these research advancements in their own selection of patients for this therapy.

3:15–4:03 pm

New Frontiers in Functional Neurosurgery

3:15–3:35 pm

Memory Aid for the Human Brain

Itzhak Fried

3:35–3:55 pm

Reanimating the Paralyzed Limbs: New Developments in FES and Brain Computer Interface

Jonathan Miller

3:55–4:03 pm

Discussion and Questions

4:03–4:45 pm

Oral Presentations



TUESDAY, SEPTEMBER 27

PROGRAM HIGHLIGHTS

General Session

10:00-10:17 am

Advancing Beyond DBS, New Avenues in Functional Neurosurgery: Adapting Endoventricular Near Infrared Illumination to Neuroprotection in Parkinson's Disease, and Achieving a Brain Driven Exoskeleton for Tetraplegic Patient

Alim-Louis Benabid

PA SECTION ON PAIN

MODERATORS: Jonathan Miller, Ahmed M. Raslan

LEARNING OBJECTIVES: Upon completion of this course, participants will be able to:

- Describe potential modes of action of spinal cord stimulation.
- Analyze the findings of novel neurosurgical studies in the treatment of pain; critique the design and methodology of these studies.
- List important areas for further knowledge development and research.
- Apply patient selection criteria to inform their offering or referral for spinal cord stimulation.

3:15-3:57 pm

New Frontiers and Mechanisms in Spinal Cord Stimulation

3:15-3:36 pm

Functional Imaging in Spinal Cord Stimulation

Milind Deogaonkar

3:36-3:57 pm

Intradural Spinal Cord Stimulation

Matthew A. Howard

3:57-4:45 pm

Oral Presentations

Luncheon Seminars

PA

T17 Trigeminal Neuralgia Management Update

MODERATOR: Kim J. Burchiel

FACULTY: Abdessamad El Ouahabi, Anil Nanda, Jean Regis, Charles Teo

LEARNING OBJECTIVES: Upon completion of this course, participants will be able to:

- Incorporate surgical, percutaneous, radiosurgical, and neuromodulation options for trigeminal neuralgia and facial pain syndromes into practice.
- Recognize the complications and outcomes with each treatment strategy.
- Summarize ongoing clinical studies which may impact future practice.

SF

SECTION ON STEREOTACTIC AND FUNCTIONAL NEUROSURGERY

MODERATORS: Aviva Abosch, Jason Schwalb

LEARNING OBJECTIVES: Upon completion of this course, participants will be able to:

- Describe the economic factors that impact upon functional neurosurgery today.
- Describe the current characteristics of compensation and workload in functional neurosurgery.
- Describe recent advances in functional neurosurgical research.
- Apply these lessons to the development of a functional neurosurgery practice and inform the care of patients with movement disorders or pain syndromes.

3:15-3:57 pm

The Socioeconomics of Functional Neurosurgery

3:15-3:36 pm

Financial Challenges and Opportunities in Functional Neurosurgery

Andre Machado

3:36-3:57 pm

Compensation and Workload of Functional Neurosurgeons: A National Survey

Joshua Rosenow

3:57-4:45 pm

Oral Presentations



WEDNESDAY, SEPTEMBER 28

PROGRAM HIGHLIGHTS

General Session

10:00-10:15 am

Advancing the Neuroscience of Human Memory Through Neurosurgery

Kareem A. Zaghloul

11:05-11:30 am

The Future of Cranial Neurosurgery—Adapting New Approaches

Ricardo Jorge Komotar

11:05-11:07 am

Introduction

Ricardo Jorge Komotar

11:07-11:12 am

Lasar Ablation

Shabbar F. Danish

11:12-11:17 am

Brainpath

John Diaz Day

11:17-11:22 am

MR Focused Ultrasound

Gelareh Zadeh

11:22-11:30 am

Illustrative Case Examples

Ricardo Jorge Komotar

TU SF

2:15-3:15 pm

CLINICAL CONTROVERSIES SESSION 3

Epilepsy Associated Cavernomas

MODERATOR: Guy M. McKhann II

SPEAKERS: Robert M. Friedlander, Murat Gunel, Jean Regis

LEARNING OBJECTIVES: Upon completion of this course, participants will be able to:

- Discuss the indications, benefits, and risks for surgical resection of cavernous malformations.
- Recognize the indications, benefits, and risks for surgical resection with mapping of cavernous malformations.
- Evaluate the indications, benefits, and risks for monitoring of cavernous malformations.

2:15-2:35 pm

Operate

Robert M. Friedlander

2:35-2:55 pm

Operate with Mapping

Guy McKhann, Jean Regis

2:55-3:15 pm

Monitor

Murat Gunel

Luncheon Seminars

SF

NEW!

W39 Minimally Invasive Deformity: New Frontiers

MODERATORS: Adam Kanter, Praveen V. Mummaneni

FACULTY: David O. Okonkwo, Paul Park, Mohammed F. Shamji, Khoi Duc Than

LEARNING OBJECTIVES: Upon completion of this course, participants will be able to:

- Describe the epidemiology and natural history of spinal deformity.
- Discuss current concepts in minimally invasive spinal deformity surgery.
- Strategize how to identify and avoid complications in minimally invasive spinal deformity surgery.
- Apply MIS strategies in the treatment of patients with spinal deformity.

SF

NEW!

W42 Epilepsy: Current and Emerging Treatment Strategies

MODERATOR: Guy M. McKhann II

FACULTY: Warren W. Boling, Edward F. Chang, Jeffrey G. Ojemann, Jason M. Schwalb, Kareem A. Zaghloul

LEARNING OBJECTIVES: Upon completion of this course, participants will be able to:

- Incorporate emerging treatment strategies for epilepsy into your practice.
- Discuss the importance of a multimodality approach to epilepsy patients.
- Summarize the current guidelines regarding epilepsy treatment.



RAPID-EXCHANGE ORAL PRESENTATIONS SESSION 6

MODERATORS: Andrew F. Ducruet, Meysam Ali Kebriaei

3:21-3:24 pm

353 High Intensity Ultrasound for the Treatment of Vincristine Induced Neuropathic Pain

Youngwon Youn, Ian Thomas Walling, Lucy Gee, Paul Neubauer, Lance Frith, Emery Williams, Clif Burdette, Julie G. Pilitsis

3:33-3:36 pm

357 Gamma Knife Stereotactic Radiosurgery in the Management of Large Cerebral AVMs

Manmohan Singh, Deepak Aggarwal, Shashank Sharad Kale



RAPID-EXCHANGE ORAL PRESENTATIONS SESSION 8

MODERATORS: Gregory W.J. Hawryluk, Alan S. Hoffer, Nader Pouratian

3:24-3:27 pm

374 Modeling the Effects of Current Steering with Directional Leads

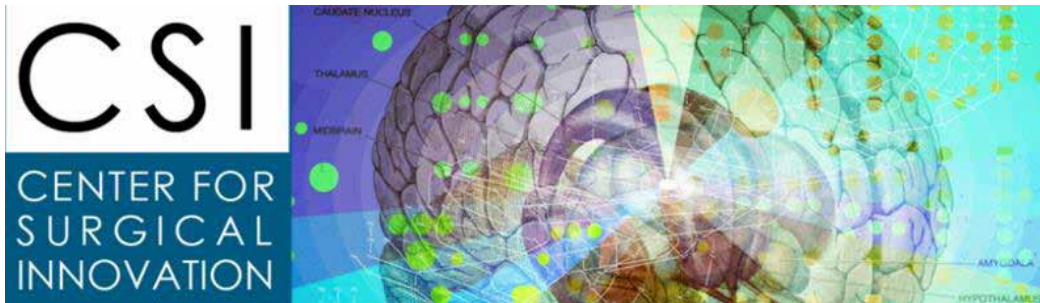
Tushar Krishnan, Richard Mustakos, G. Karl Steinke

3:27-3:30 pm

375 DIRECT DBS: A Prospective, Multi-center Clinical Trial with Blinding for a Directional DBS Lead

Jens Volkmann, Stephan Chabardes, G. Karl Steinke, Stephen Carciari

*The University of Colorado Department of Neurosurgery,
in association with the ASSFN, NREF and AANS, present:*



Stereotactic and Functional Neurosurgery Hands-on Workshop

Nov. 4-6, 2016

Center for Surgical Innovation
Denver

**World Society for Stereotactic
and Functional Neurosurgery**

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