CONGRATULATIONS to the 2016 Award Recipients!

Scott L. Parker, MD
J.A.N.E. Award

Jared D. Ament, MD, MPH
Mayfield Clinical Science Award

Ganesh Shankar, MD
Mayfield Basic Science

Joey K. Grochmal, MD
Kline Peripheral Nerve Top Abstract

Rajiv Midha, MD, MSc
Kline Peripheral Nerve Research Award

Charlie Kuntz IV Scholars

Nitin Agarwal, MD
Andrew Kai-Hong Chan, MD
Jacob Cherian, MD
Ekamjeet Singh Dhillon, MD
Doniel Drazin, MD, MA
Benjamin D. Elder, MD, PhD
Gurpreet Surinder Gandhoke, MD
Ezequiel Goldschmidt, MD, PhD
Randall B. Graham, MD
Kiyoshi Ito, MD, PhD
Ricky Raj Singh Kalra, MD
Ryan Khanna, BS
Darryl Lau, MD
Rory R. Mayer, MD
Marcus D. Mazur, MD

Michael Maurice McDowell, MD
Catherine Miller, MD
Nelson Moussazadeh, MD
Rory K.J. Murphy, MD
Tianyi Niu, MD
Aria Nouri, MD, MSc
Alp Ozpinar, MD
Brenton Pennicooke, MD, MS
Kavelin Rumalla
David J. Salvetti, MD
Hesham M. Soliman, MD
Zachary Tempel, MD
Alexander Tuchman, MD
Anand Veeravagu, MD
Todd Douglas Vogel, MD
On behalf of the Section on Disorders of the Spine and Peripheral Nerves Executive Committee and Annual Meeting Committee, welcome to Spine Summit 2016 at the Loews Royal Pacific Resort at Universal Orlando®!

With eleven international spine societies in attendance, our scientific program truly encompasses Global Challenges, Universal Solutions. We extend greetings and special thanks to our partner societies: American College of Osteopathic Surgeons, Association for Collaborative Spine Research, AO Spine North America, Cervical Spine Research Society, International Society for the Advancement of Spine Surgery, Scoliosis Research Society, Society of Lateral Access Surgery, Society for Minimally Invasive Spinal Surgery, and our international partners, Neurological Society of India, Korean Neurosurgical Society, and Brazilian Neurosurgical Society.

We also welcome Honored Guests Christopher I. Shaffrey and Lawrence G. Lenke and Meritorious Member Award recipient, Philip R. Weinstein. This year, we’ve added more provocative debates with leading experts on controversial topics during the scientific sessions and specialty breakout courses. Back for another round are the Cahill Controversies sessions—get a good seat to watch experts debate the current hot-topic issues affecting our specialty!

After a record-breaking number of abstract submissions this year, we’re showcasing over 200 top-ranked abstracts in oral platform presentations, including our 2016 award winners and the new Charlie Kuntz IV Scholars.

Be sure to take advantage of the What’s New Sessions during your beverage breaks and lunch with exhibitors in the exhibit hall.

From Wednesday’s Opening Reception to Friday’s Young Neurosurgeons’ Dinner, take advantage of the opportunities to connect with your peers. For fun and relaxation, don’t forget a trip to the theme park! With fantastic rides, outstanding dining, and exciting entertainment options, we know you’ll find much to enjoy.

Thank you again for joining us at Spine Summit 2016. We hope your meeting experience is exceptional.

Sincerely,

Praveen V. Mummaneni, MD
Section Chairman
Zoher Ghogawala, MD, FACS
Annual Meeting Chair
Adam S. Kanter, MD
Scientific Program Chair
Get Connected!
Spine Summit 2016 Annual Meeting App

Conveniently manage your schedule, browse program content, and keep up with what’s going on.

Download the free EventPilot app, then log in with event code: SPINE16

http://ativ.me/4dd
http://ativ.me/googleplay
http://ativ.me/spine16
Dr. Praveen Mummaneni graduated from the six-year BA/MD program at Boston University. He completed his neurosurgical residency at UC San Francisco and a spine fellowship at Emory University in Atlanta. His was an assistant professor of neurosurgery at Emory from 2002 to 2006. He then returned to UCSF, where he is now a professor and vice chairman of the Department of Neurosurgery. Dr. Mummaneni was board certified by the American Board of Neurological Surgery in 2005 and served as a guest examiner for the Oral Board Examination in 2011. He has been listed in Best Doctors in America from 2005 to 2016, a Top Doctor by Castle Connolly, and named a “San Francisco Super Doctor” by the San Francisco Chronicle.

His research has focused on cervical stenosis and kyphosis as well as minimally invasive approaches to spinal deformity surgery and spinal tumors. He has been the honored guest lecturer at numerous international meetings. He is the editor of five textbooks including Spinal Deformity: A Guide to Surgical Planning and Management, Handbook of Minimally Invasive and Percutaneous Spine Surgery, Handbook of Spine Surgery, Cervical Spine Surgery: Current Trends and Challenges, and Minimally Invasive Spinal Deformity Surgery: An Evolution of Modern Techniques. Dr. Mummaneni is a member of the editorial board of the Journal of Neurosurgery: Spine and has published over 200 manuscripts in peer-reviewed journals and given 500 presentations.
Dr. Philip Weinstein is professor emeritus in the Department of Neurological Surgery at University of California, San Francisco (UCSF). He was the founding co-director of the interdisciplinary UCSF Spine Center and chief of the Neuro-spinal Disorders Division in the UCSF neurosurgery department. He was a founding neurosurgeon and executive committee member-at-large of the Section on Disorders of the Spine and Peripheral Nerves.

Dr. Weinstein is a graduate of Princeton University and New York University College of Medicine. He completed his residency at UCSF. After military service as a neurosurgeon in the US Air Force and appointment as chief of neurosurgery at the San Francisco Veteran’s Hospital, he served as professor and chief of neurosurgery at the University of Arizona Medical Center in Tucson. He subsequently returned to UCSF as vice chairman and residency program director, where he has served as advisor and mentor to numerous residents and fellows. In addition to serving on numerous committees of the CNS and AANS, he is past president of the Society of Neurological Surgeons (SNS).

He edited a classic book, *Diagnosis and Management of Lumbar Spinal Stenosis*, in 1977. Since then he has published widely on such diverse spinal topics as spinal cord injury repair, chymopapain disc injection, cervical stenosis, cervical arthroplasty, ankylosing spondylitis, ossification of the posterior longitudinal ligament, spinal cord ependymoma, extra-medullary and metastatic spinal tumors, intradural and Tarlov cysts, MRI Neurography, dorsal cord and peripheral nerve stimulation and intrathecal morphine administration. He has also published results of extensive clinical and laboratory research on brain protection and ECIC bypass for focal cerebral ischemia as his parallel area of neurosurgical interest. He has served as editorial board member of *Neurosurgery* and *Journal of Spinal Disorders*. His current interests include MIS, molecular markers for spinal cord tumor grading the role of tau protein in delayed propagation of SCI and neurogenesis after cerebral ischemia.
Christopher I. Shaffrey  
John A. Jane Professorship of Neurological Surgery  
Division Head Spine Surgery  
Professor of Orthopaedic Surgery  
University of Virginia Medical Center

Dr. Christopher Shaffrey graduated magna cum laude from The Citadel in 1982 with a BS in biology. He received his medical degree from the University of Virginia and completed his internship at Naval Hospital San Diego where he was named the surgical intern of the year. He completed neurosurgical and orthopaedic residencies at the University of Virginia, followed by a spine fellowship in pediatric and adult reconstructive spine surgery. He was appointed to the senior staff in the Departments of Neurological Surgery and Orthopaedic Surgery at Henry Ford Hospital, where he was involved in treating members of Detroit’s college and professional athletic teams. In 1999, Dr. Shaffrey was appointed associate professor of neurological surgery and adjunct associate professor of orthopaedic surgery and sports medicine at the University of Washington in Seattle. In 2003, he returned to the University of Virginia as professor of neurological surgery and director of the neurosurgery spine division. In 2008, he was named Harrison Distinguished Teaching Professor of Neurological and Orthopaedic Surgery. In 2013, Dr. Shaffrey was named the John A. Jane Professor of Neurological Surgery.

Dr. Shaffrey has an active research interest in spinal surgery, particularly in numerous multicenter outcome research studies of pediatric and adult scoliosis, spinal cord injury, spinal trauma, and tumors involving the spinal column. He has served on the editorial boards of Journal of Neurosurgery, Neurosurgery, Spine, Spine Deformity, European Spine Journal, and Journal of Spinal Disorders. He is currently a deputy editor for the journals Spine and Spine Deformity. Dr. Shaffrey has over 300 peer-reviewed publications, more than 750 national and international presentations, and has served as editor for several textbooks on spinal surgery. Dr. Shaffrey has won numerous awards for clinical medicine, and has been listed in Best Doctors and Top Doctors. He has served as the chair for the Section on Disorders of the Spine and Peripheral Nerves. He is a director for the American Board of Neurological Surgery, the secretary of the AANS, and the treasurer of the CSRS. He has been named to numerous honorary academic societies including the American Orthopaedic Association, the American Academy of Neurological Surgery, and the Society of Neurological Surgeons.
Dr. Lawrence Lenke is the chief of spinal surgery at Columbia University Department of Orthopedics and surgeon-in-chief at The Spine Hospital at New York Presbyterian/The Allen Hospital. His practice is devoted exclusively to the treatment of complex pediatric and adult spinal deformity. He treats patients at The Spine Hospital and The Children’s Hospital of New York, Manhattan. Dr. Lenke graduated summa cum laude from the University of Notre Dame and attended medical school at Northwestern University in Chicago, also graduating with honors. He completed his surgical internship and orthopaedic surgical residency at Washington University School of Medicine in St. Louis, Missouri, as well as his pediatric and adult spinal surgery fellowship. Dr. Lenke remained at Washington University as an attending spinal surgeon, rising from the ranks of assistant professor to the Jerome J. Gilden Distinguished Professor of Orthopaedic Surgery in less than ten years. He was in practice there for 22 years, then moved his practice to Columbia University/New York-Presbyterian Hospital System, New York City, in 2015.

Dr. Lenke is world-renowned for the surgical treatment of pediatric and adult patients with various forms of spinal pathology, with expertise in the most complex deformities. His clinical research has culminated in over 450 publications and more than 100 presentations. He has presided as chair of over 100 spinal surgery courses worldwide. He has edited several textbooks on spinal deformity surgery and serves as editor for *Spine*, *The Journal of Bone and Joint Surgery*, *The Spine Journal*, *The Journal of Spinal Disorders & Techniques*, *Spine Deformity*, *Journal of Neurosurgery: Spine*, and the *Journal of Pediatric Orthopaedics*. Dr. Lenke has been listed in *America’s Top Doctors*, in *Best Doctors in America*, and in *Orthopedics This Week* as one of “The Top 28 Spine Surgeons in North America.” He was honored with the North American Spine Society’s 2013 Leon Wiltse Award for excellence in leadership and/or clinical research in spine care. He served as president of the Scoliosis Research Society (SRS) where he chaired a task force that led to the development of *Spine Deformity*, which debuted in January 2013 as the official journal of the SRS.
WELCOME TO OUR SPINE SUMMIT
PARTNER SOCIETY LEADERS

American College of Osteopathic Surgeons (ACOS)
Brett Alan Schlifka

Association for Collaborative Spine Research (ACSR)
Kris Radcliff

AO Spine—North America
Michael G. Fehlings

Korean Neurosurgical Society (KNS)
Chun Kee Chung

Brazilian Neurosurgical Society (BNS)
Asdrubal Falavigna
SPINE SUMMIT PARTNER
SOCIETY LEADERS

Cervical Spine Research Society (CSRS)
Robert F. Heary

International Society for the Advancement of Spine Surgery (ISASS)
Rolando Garcia

Neurological Society of India (NSI)
Vedantam Rajshekhar

Scoliosis Research Society (SRS)
David W. Polly Jr.

Society for Minimally Invasive Spinal Surgery (SMISS)
William Taylor
Wednesday, March 16, 2016

11:00 am — 5:30 pm Registration North Desk

Registration

12:30 – 1:30 pm Java Sea 1 & 2
Pre-Meeting Lunch Symposia
Be sure to enjoy our complimentary lunch and educational information.

Moderators: Daniel Hoh, Charles A. Sansur
Faculty: Justin Smith

Special Course I
1:30 – 5:30 pm Pacifica Ballroom 8/9

Business Challenges and Solutions: Surviving in a Bundle

Course Directors: Domagoj Coric, Luis M. Tumialan
Faculty: Mary S. Cloninger, Andrew T. Dailey, Kevin T. Foley, John J. Knightly, John Ratliff, Daniel Refai

Learning Objectives: Upon completion of this course, participants will be able to:

- Analyze their own practices with a greater understanding of co-management agreements with hospitals.
- Review bundled payments, how to engage with the hospital, discuss payer interests in the bundled and risk sharing involved with a bundled payment model.
- Respond to the changing socioeconomic climate of a value-based payment system.

1:30 – 1:50 pm
Online Neurosurgeon Scorecards: Consumer’s Checkbook, Propublica, CMS Website Awareness and the Implications on your Practice
Luis M. Tumialan

1:50 – 2:10 pm
N2QOD: The Future Direction of Registries
John J. Knightly

2:10 – 2:30 pm
Questions and Discussion

2:30 – 2:50 pm
The Future of ASCs/Co-management, Gainsharing and the Imminent Spine Bundle
Domagoj Coric
2:50 – 3:10 pm
Defining Quality and Value of Your Care Through Practice Data Collection
Kevin T. Foley

3:10 – 3:20 pm
Questions and Discussion

3:20 – 3:40 pm
Break

3:40 – 4:00 pm
Patient Satisfaction: What Really Drives Patient Perception
Andrew T. Dailey

4:00 – 4:20 pm
Practice Management in the Age of the Affordable Care Act, Meaningful Use, and ICD-10
Mary Cloninger

4:20 – 4:40 pm
Questions and Discussion

4:40 – 5:00 pm
Hospital Efficiencies
Daniel Refai

5:00 – 5:20 pm
CPT Update for 2016
John Ratliff

5:20 – 5:30 pm
Questions and Discussion

Special Course II

1:30 – 5:30 pm Pacifica Ballroom 10

$200

SRS: Deformity Challenges and Solutions: Predicting and Achieving Spinal Balance

Course Directors: Shay Bess, David O. Okonkwo
Speakers: Christopher P. Ames, Sigurd Berven, Shay Bess, Steven D. Glassman, Michael P. Kelly, Tyler R. Koski, Frank La Marca, Virginie Lafage, Lawrence Lenke, David O. Okonkwo, David W. Polly, Themistocles Protopsaltis, Daniel M. Sciubba, Christopher I. Shaffrey, Justin S. Smith

Course Description: This course will explore current concepts regarding evaluation and treatment of adult spinal deformity patients, including up-to-date research findings on clinical assessment, patient reported outcomes, appropriate surgical treatment, and management of complications. Opportunities will be provided to for attendees to discuss concepts with the faculty.
Learning Objectives: Upon completion of this course, participants will be able to:

- Clinically and radiographically evaluate patients with adult spinal deformity to identify sources of pain and potential risks for poor treatment outcomes.
- Identify adult spinal deformity patients appropriate for surgical treatment and create an appropriate surgical treatment plan.
- Identify risks for intraoperative and postoperative complications and learn techniques to help prevent and resolve complications.

1:30 – 1:35 pm
Introduction
Shay Bess, David O. Okonkwo

1:35 – 1:50 pm
Patient Reported Outcome Measures: Why We Measure Patient Outcomes and How We Can Improve the Data We Collect
Steven D. Glassman

1:50 – 2:05 pm
Measuring Spinal Alignment, Defining the Spectrum from Isolated Degenerative Conditions to Adult Spinal Deformity, and Correlations with Patient Reported Outcomes
Virginie Lafage

2:05 – 2:20 pm
Patient Specific Spinal Alignment: Are All Patient Deformities the Same?
Themistocles Protopsaltis

2:20 – 2:35 pm
Choosing the Most Appropriate Upper and Lower Instrumented Vertebra for Adult Spinal Deformity and the Consequences of Wrong Decisions
Michael P. Kelly

2:35 – 2:50 pm
Fixed vs. Flexible Spinal Deformities: When and How to Perform Osteotomy Procedures
Daniel M. Sciubba

2:50 – 3:00 pm
Questions

3:00 – 3:15 pm
Does Minimally Invasive Surgery Improve Outcomes for Adult Spinal Deformity and Who Are the Most Appropriate Patients
Frank La Marca
MEETING AGENDA

WEDNESDAY

3:15 – 3:30 pm
Why Do Patients Improve Following Adult Spinal Deformity Surgery and What Patients Are at Risk For Not Improving?
Justin S. Smith

3:30 – 3:45 pm
Optimizing Costs in Spinal Deformity Surgery: Surgeon and Government Perspectives and Current Efforts
David W. Polly

3:45 – 4:00 pm
Questions and Beverage Break

4:00 – 4:15 pm
Do Complications Impact Patient Outcomes and Are All Complications the Same?
Sigurd Berven

4:15 – 4:30 pm
Optimizing Patient Health in Preparation for Spinal Deformity Surgery
Tyler R. Koski

4:30 – 4:45 pm
Neurological Complications and Spinal Deformity Surgery: Risk Factors, Avoidance, and Management
Lawrence Lenke

4:45 – 5:00 pm
Proximal Junction Failure: Definition, Risk Factors, and Avoidance
Sigurd Berven

5:00 – 5:15 pm
Collaborative Efforts in Spine Surgery: Dual Surgeon Experience and Other Collaborations
Christopher P. Ames

5:15 – 5:25 pm
Is This Patient Appropriate for Your Practice and Facility? Deciding When to Keep and When to Refer Complex Spine Deformity Patients
Christopher I. Shaffrey

5:25 – 5:30 pm
Discussion, Questions, and Final Remarks
Shay Bess, David O. Okonkwo
Special Course III

1:30 – 5:30 pm  Pacifica Ballroom 11  

$200

BNS: Spine Trauma Challenges and Solutions

Course Directors: Asdrubal Falavigna, Michele Marie Johnson, Michael P. Steinmetz  
Moderators: Alecio CES Barcelos, Ricardo V. Botelho, Michele Marie Johnson, Michael P. Steinmetz  
Speakers: E. Bertolini, Albert V. B. Brasil, Joseph S. Cheng, Dean Chou, Fernando L. R. Dantas, Asdrubal Falavigna, Geraldo de Sa Carneiro Filho, Michele Marie Johnson, Jeronimo Buzetti Milano, Osmar Moraes, Marcelo Luis Mudo, Michael P. Steinmetz

Course Description: This course will provide practical, current didactic information on spine trauma through lectures, interactive case presentations, and discussion. Particular emphasis will be given to surgical approaches, radiographic interpretation and classification, stabilization techniques, complication avoidance and management, and decision-making process.

Learning Objectives: Upon completion of this course, participants will be able to:

1. Describe the guidelines for identifying and assessing spine injuries.
2. Recognize the appropriate decision-making process for different types of fractures.
3. Select the best approaches for a spine trauma patient.
4. Develop strategies for complication avoidance and management.

1:30 – 2:30 pm
Craniocervical Junction Session

Moderator: Michele Marie Johnson

1:30 – 1:45 pm
Complex Fractures C1–C2
Fernando L. R. Dantas

1:45 – 2:00 pm
How to Choose the Appropriate Treatment and Approach to Type II Odontoid Fracture in Elderly Patients?
Michael P. Steinmetz

2:00 – 2:15 pm
What is the Best Approach to Traumatic Spondylolisthesis of the Axis or Hangman Fracture?
Albert V. B. Brasil

2:15 – 2:30 pm
Discussion
2:30 — 3:30 pm
Cervical and Cervicothoracic Junction Session
Moderator: Ricardo V. Botelho

2:30 — 2:45 pm
Timing of Surgery for Spinal Cord Injury
Michele Marie Johnson

2:45 — 3:00 pm
Does the Literature Support Anterior Reduction and Stabilization in Cervical Spine Fracture–luxation?
E. Bertolini

3:00 — 3:10 pm
How to Manage the Anterior Traumatic Spinal Cord Compression in the Cervicothoracic Junction?
Asdrubal Falavigna

3:10 — 3:20 pm
Avoidance of Medical Complications
Andrea Strayer

3:20 — 3:30 pm
Discussion

3:30 — 3:45 pm
Beverage Break

3:45 — 4:45 pm
Thoracic and Thoracolumbar Session
Moderator: Alecio CES Barcelos

3:45 — 4:00 pm
Operative vs. Conservative Approaches to Thoracolumbar Burst Fracture
Jeronimo Buzetti Milano

4:00 — 4:15 pm
Restoration of the Weight Bearing Spine in Thoracolumbar Burst Fractures: When Is the Anterior Approach Necessary?
Joseph S. Cheng

4:15 — 4:30 pm
Post Traumatic Deformity: Surgical Planning
Dean Chou

4:30 — 4:45 pm
Discussion
**Particularities and Controversy Session**

Moderator: Michael P. Steinmetz

- **4:45 – 5:00 pm**
  **Neural Reconnections After Spinal Trauma**
  Osmar Moraes

- **5:00 – 5:15 pm**
  **Fixation Without Fusion**
  Marcelo Luis Mudo

- **5:15 – 5:30 pm**
  **Sacral Fractures**
  Geraldo de Sa Carneiro Filho

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**Special Course IV**

1:30 – 5:30 pm  Pacifica Ballroom 12

**NSI: Economic, Quality, and Surgical Practice Trends in India**

**Course Directors:** Shekar N. Kurpad, Vedantam Rajshekhar


**Course Description:** This course will describe the current status of spinal neurosurgery in India and explore facets of spinal surgery that are unique to the Indian spinal neurosurgery environment such as infections and congenital malformations in the spine (with particular on spinal tuberculosis), as well as basilar invagination. The course will also summarize other developments in spinal neurosurgery in India including the economics of the Indian practice environment, minimally invasive surgery, deformity correction, and trauma.

**Learning Objectives:** Upon completion of this course, participants will be able to:

- Review the current status of spinal neurosurgery in India and recognize facets of spinal surgery that are unique to the Indian spinal neurosurgery environment.
- Describe the treatment options for spinal infections and congenital malformations.
- Recognize the economics and quality measures of spinal neurosurgery in the Indian environment.
1:30 – 1:35 pm
Introduction and Welcome
Ramesh C. Mishra, Praveen V. Mummaneni

1:35 – 2:30 pm
Spinal Tuberculosis

1:35 – 1:47 pm
Overview of Spinal Tuberculosis: Epidemiology, Surgical Presentation, and Approaches to Treatment
Bhawani S. Sharma

1:47 – 1:59 pm
Spinal Tuberculosis in Adults: Surgical Considerations
Shashank Sharad Kale

1:59 – 2:11 pm
Surgical Approaches for Spinal Tuberculosis in Children
Sandip Chatterjee

2:11 – 2:23 pm
Late Reconstruction of TB of the Thoracic Spine
Munish Gupta

2:23 – 2:30 pm
Questions and Discussion on Spinal Tuberculosis

2:30 – 3:30 pm
Cervical Spondylotic Myelopathy

2:30 – 2:42 pm
Overview and Epidemiology of Cervical Spondylotic Myelopathy in Indian Subcontinent
Deepu Banerji

2:42 – 2:54 pm
Anterior Cervical Approaches: Rationale, Techniques, Results, and Complications
Vedantam Rajshekhar

2:54 – 3:06 pm
Posterior Cervical Approaches: Rationale, Techniques, Results, and Complications
Krishna Prabhu

3:06 – 3:18 pm
Innovative Approaches to Cervical Reconstruction
Krishna Prabhu

3:18 – 3:30 pm
Questions and Discussion
3:30 – 4:30 pm
Basilar Invagination

3:30 – 3:42 pm
Basilar Invagination: Overview, Epidemiology, Surgical Considerations
P. Sarat Chandra

3:42 – 3:54 pm
Evolution of Surgical Approaches to Basilar Invagination
Sanjay Behari

3:54 – 4:06 pm
Choice of Surgical Approach for Basilar Invagination: Critical Evaluation with Respect to Long Term Outcomes
Sanjay Behari

4:06 – 4:18 pm
Case Vignettes and Complication Avoidance in Basilar Invagination Surgery
P. Sarat Chandra

4:18 – 4:30 pm
Overview, Comments, and Questions
P.S. Ramani

4:30 – 5:30 pm
Economics and Practice Management of Spinal Surgery in India

4:30 – 4:42 pm
The Economics of Academic Practice: Patient, Pathology, Reimbursement, and Viability
Deepak Kumar Gupta

4:42 – 4:54 pm
Transitioning from Academic to Private Practice: Pros and Cons
Ramesh C. Mishra

4:54 – 5:06 pm
Economics and Practical Application of Novel Spinal Technologies
Alok Ranjan

5:06 – 5:18 pm
Reimbursement Systems and Dynamics of Medical Tourism for Elective Spinal Surgery
Deshpande Vasudeva Rao Rajakumar

5:18 – 5:25 pm
Questions and Discussion
### Special Course V

**Timor Sea I**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Title</th>
<th>Presenter(s)</th>
</tr>
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</table>

**Course Description:** The objective of this case-based course will focus on the rationale, indications, technique, outcomes and complications of the lateral retroperitoneal transpsoas approach to the thoraco/lumbar spine. Each lecture will include a study case followed by clinical pearls, complication avoidance, and an interactive discussion between faculty and participants.

**Learning Objectives:** Upon completion of this course, participants will be able to:

1. Review and discuss indications for the lateral thoracolumbar interbody fusion procedure.
2. Discuss the anatomic limitations and constraints of lateral approach surgery.
3. Discuss the varied complications and their avoidance in lateral access surgery.

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Title</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 – 2:00 pm</td>
<td><strong>L4/5 Challenges: Is It Safe and Reproducible?</strong></td>
<td>Frank M. Phillips</td>
</tr>
<tr>
<td>2:00 – 2:30 pm</td>
<td><strong>Lateral at Thoracolumbar Junction: How to Mobilize Diaphragm/Pleura</strong></td>
<td>John Pollina</td>
</tr>
<tr>
<td>2:30 – 3:00 pm</td>
<td><strong>Femoral Nerve Injuries: Lessons Learned, Management, and Avoidance</strong></td>
<td>Juan S. Uribe</td>
</tr>
<tr>
<td>3:00 – 3:30 pm</td>
<td><strong>Lateral Stand Alone: When It’s Safe</strong></td>
<td>Luiz Pimenta</td>
</tr>
</tbody>
</table>
3:30 – 4:00 pm
Implant Subsidence: How to Protect the Indirect Decompression
Robert E. Isaacs

4:00 – 4:30 pm
Anterior Column Reconstruction in Deformity: When and How
Armen Deukmedjian

4:30 – 5:00 pm
Neuro Monitoring: EMG, MEP, SEEPS—All, Some, or None
William R. Taylor

5:00 – 5:30 pm
Visceral and Vascular Injuries: Avoidance and Management
Adam S. Kanter

Opening Reception
6:30 – 8:00 pm
Wantilan Pavilion
Loews Royal Pacific Resort

Opening Reception
Experience the natural elegance of the islands in a secluded, dramatic setting with a lava-rock fire pit, tiki torches, and exotic foliage. Enjoy a lavish array of food and beverages and listen to live entertainment while you mingle with old friends and new colleagues. Resort casual attire is recommended.
Thursday, March 17, 2016

7:00 am – 5:30 pm  
Registration North Desk

Registration

7:00 – 8:00 am  
Pacifica Ballroom 7 Foyer

Complimentary Continental Breakfast

7:30 – 7:55 am  
Pacifica Ballroom 7

Challenging Cases and Solutions  
Speakers: Daniel Refai, Luis M. Tumialan

7:55 – 8:00 am  
Welcome to Spine Summit 2016: Global Challenges, Universal Solutions  
Adam S. Kanter

Scientific Session I

8:00 – 9:40 am  
Pacifica Ballroom 7

How the Masters Avoid Disasters  
Moderators: Paul Park, Michael P. Steinmetz


Learning Objectives: Upon completion of this session, participants will be able to:

- Review the appropriate decision making process for spine surgery cases.
- Discuss complications and avoidance techniques.
- Recognize unique challenges in spinal surgery.
- Develop strategies that can be used to deal with surgical complications.

8:00 – 8:07 am  
ISASS  
Lumbar TDR: Fit the Disc to the Patient, Not the Patient to the Disc  
Rolando Garcia

8:07 – 8:14 am  
SOLAS  
LLIF for Deformity Correction Gone Wrong  
Frank M. Phillips
8:14 — 8:21 am
ACOS
Undertreating Adult Degenerative Pathology: When Alignment Matters
Brett Alan Schlifka

8:21 — 8:28 am
SMISS
Neuromonitoring: Why It’s Necessary with LLIF
William R. Taylor

8:28 — 8:31 am
Questions and Answers

8:31 — 8:38 am
BNS
Lumbar Instability Post Tumor Resection
Asdrubal Falavigna

8:38 — 8:45 am
NSI
Cervical Corpectomy for OPLL: Avoiding Spinal Cord Injury
Vedantam Rajshekhar

8:45 - 8:52 am
KNS
How to Address CSF Leak in OPLL Surgery
Chun Kee Chung

8:52 — 8:59 am
AO Spine
Perioperative Spinal Cord Injury: Prevention and Management
Michael G. Fehlings

8:59 - 9:02
Questions and Answers

9:02 — 9:09 am
LSRS
Preventing Surgical Site Infection in Lumbar Surgery
Paul Anderson

9:09 — 9:16 am
ACSR
From Degenerative to Deformity: Reconstruction of Iatrogenic Flatback
Kris Radcliff

9:16 — 9:23 am
SRS
Revision Spinal Deformity Surgery: When to Say When
David W. Polly
9:23 – 9:30 am
CSRS
Importance of Cervical Spine Sagittal Alignment
Robert F. Heary

9:30 – 9:37 am
DSPN
Keys to the Kingdom: Global Alignment
Regis W. Haid

9:37 – 9:40 am
Questions and Answers

Scientific Session II
9:40 – 10:30 am Pacifica Ballroom 7

Honored Guests and Awards

9:40 – 9:45 am
Meritorious Award Presentation—Neurosurgery
Christopher I. Shaffrey
Presented by Mark Edwin Shaffrey, Praveen V. Mummaneni

9:45 – 9:50 am
Meritorious Award Presentation—Orthopedics
Lawrence Lenke
Presented by Peter D. Angevine, Praveen V. Mummaneni

9:50 – 9:55 am
Introduction of DSPN Chairman
Adam S. Kanter

9:55 – 10:10 am
DSPN Chairman’s Address
Praveen V. Mummaneni

10:10 – 10:15 am
The J.A.N.E. Award: Honoring a Legacy
Presented by David O. Okonkwo

The J.A.N.E. award honors the legacy of Dr. John Anthony Jane Sr., 1931-2015. Dr. Jane was a world-renowned neurosurgeon, scientist, and teacher. Exceptionally influential in neurosurgery, he held leadership positions in the ABNS and the Senior Society, and served as editor of the Journal of Neurosurgery for more than 20 years.
10:15 — 10:20 am
**Charlie Kuntz IV Scholars: A New Spine Summit Tradition**  
*Presented by Christopher I. Shaffrey, Charles H. Kuntz III*

The Kuntz Scholarship was created in memory of Dr. Charlie Kuntz IV, 1964-2015. Dr. Kuntz was a passionate leader of our specialty who made the world a better place. In his roles as Treasurer and Annual Meeting Chair for the Section on Disorders of the Spine and Peripheral Nerves, he helped build the section into the incredible organization it is today.

10:20 — 10:30 am
**Award Recipient Recognition**  
*John Chi, Praveen V. Mummaneni*

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**Beverage Break and What’s New Session II**

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Moderators</th>
<th>Faculty</th>
</tr>
</thead>
</table>
| 10:30 – 11:00 am | Exhibit Hall Demo Theater  
Pacifica Ballrooms 1-6 | *Rishi K. Wadhwa, John E. Ziewacz* | *Justin Smith* |
| 10:33 – 10:43 am | Maximizing Lumbar Lordosis with  
a novel expandable lateral Spacer | *Kevin Cahill* | |
| 10:47 – 10:57 am | Introducing the Neuro-Spinal  
Scaffold™ for Acute Spinal Cord Injury Treatment | *Nicholas Theodore* | |
Scientific Session III  
11:00 am – 12:00 pm Pacifica Ballroom 7

SRS: Deformity Challenges and Solutions

Moderators: Praveen V. Mummaneni, Justin S. Smith  
Speakers: Sigurd Berven, John R. Dimar, Steven D. Glassman, Munish Gupta, Lawrence Lenke, Christopher I. Shaffrey

Learning Objectives: Upon completion of this session, participants will be able to:
- Discuss the different treatment options for spinal deformity cases.
- Review important parameters of spinopelvic balance and alignment.
- Appraise the current management options for spinal deformity.
- Recognize the challenges in spinal deformity management and best practices available.

11:00 – 11:25 am
Debate: Anterior Column Reconstruction in Adult Spinal Deformity—Superior or Superfluous?

11:00 – 11:10 am  
Superior!  
Christopher I. Shaffrey

11:10 – 11:20 am  
Superfluous!  
Lawrence Lenke

11:20 – 11:25 am  
Discussion

11:25 – 11:33 am
Spinopelvic Balance: Why It Matters in Every Case  
John R. Dimar

11:33 – 11:41 am
The Schwab Osteotomy Classification in Adult Spinal Deformity Correction  
Sigurd Berven

11:41 – 11:49 am
Pedicle Subtraction Osteotomies: How to Reduce Complications  
Munish Gupta

11:49 – 11:57 am
Adult Spinal Deformity Surgery—When to Say No!  
Steven D. Glassman

11:57 am – 12:00 pm
Round Table Discussion
MEETING AGENDA

THURSDAY

Complimentary Lunch with Exhibitors
12:00 – 1:00 pm
Exhibit Hall
Pacifica Ballrooms 1-6

Sponsored Lunches:

DePuy Synthes Pacifica Ballrooms 8 & 9
Complex Spine Simplified Treatment Solutions for Adult and Pediatric Deformity
Faculty: Frank LaMarca, Elias Dakwar

NuVasive Pacifica Ballroom 10
Role of Cervical Lordosis in Achieving Global Spinal Alignment
Faculty: Don Blaskiewicz, Steve J. Tresser

Globus Medical Pacifica Ballroom 11
Maximizing Lumbar Lordosis with MIS LLIF & TLIF
Faculty: Kevin Cahill, Paul K. Kim

Medtronic Pacifica Ballroom 12
Transforming Your TLIF Procedure — The Latest Innovations in MIS Technologies
Faculty: Josh Ammerman

Scientific Session IV
1:00 – 2:00 pm
Pacific Ballroom 7

Fusion Challenges and Solutions
Moderators: Erica Fay Bisson, Zoher Ghogawala, Junichi Mizuno
Speakers: Sanjay S. Dhall, Joseph C. Maroon, Hiroshi Nakagawa, Vedantam Rajeshkhar, William Charles Welch, Robert G. Whitmore

Learning Objectives: Upon completion of this session, participants will be able to:
- Discuss the challenges of spinal fusion surgery.
- Discuss the complications and avoidance pearls for spinal fusion procedures.
- Review the clinical and radiographic outcomes of spinal fusion surgery.
- Recognize cost implications of spinal fusion surgery.

1:00 – 1:30 pm
Debate: Cervical Spondylotic Myelopathy—Laminoplasty vs. Fusion?
1:00 — 1:08 pm
Laminoplasty
Hiroshi Nakagawa

1:08 — 1:16 pm
Fusion
Vedantam Rajshekhar

1:16 — 1:24 pm
Cost Effectiveness Comparison
Robert G. Whitmore

1:24 — 1:30 pm
Panel Discussion

1:30 — 1:38 pm
Type II Odontoid Fractures: Age-based Solutions
Sanjay S. Dhall

1:38 — 1:46 pm
Grade I Spondylolisthesis: Implications of Value-based Solutions
William Charles Welch

1:46 — 1:52 pm
Disc Herniations in the Athlete: When to Fuse?
Joseph C. Maroon

1:52 — 2:00 pm
Round Table Discussion

Scientific Session V

2:00 — 3:00 pm
Pacifica Ballroom 7

Lateral MIS Challenges and Solutions

Moderators: Dean Chou, Juan S. Uribe

Learning Objectives: Upon completion of this session, participants will be able to:

- Recognize the indications and limitations of minimally invasive lateral access surgery.
- Discuss approaches to commonly presented problems in spinal surgery.

2:00 — 2:22 pm
Debate: Lateral Access MIS Surgery—Do the Benefits Outweigh the Risks?
2:00 – 2:08 pm
Pro MIS: Less Invasive = Less Infected!
Frank M. Phillips

2:08 – 2:16 pm
Con MIS: Less Invasive = Less Effective!
Robert Hart

2:16 – 2:22 pm
Panel Discussion

2:22 – 2:30 pm
Stand–alone Lateral Interbody Fusion—Does It Have a Role?
Luiz Pimenta

2:30 – 2:38 pm
Limitations of Lateral MIS Surgery: Not for Everyone!
William R. Taylor

2:38 – 2:46 pm
The Growing Role of Lateral MIS Surgery in Deformity Correction
Michael Y. Wang

2:46 – 2:54 pm
Lateral MIS Imperfect, but in Demand! What Is Its Future?
Richard G. Fessler

2:54 – 3:00 pm
Round Table Discussion

Beverage Break and What's New Session III

3:00 – 3:30 pm
Exhibit Hall Demo Theater
Pacifica Ballrooms 1 - 6

Moderators: John Chi, Daniel C. Lu

3:03 – 3:13 pm
Luna 3D: A Novel Multi-Expandable Interbody Technology
Faculty: Richard G. Fessler

3:17 – 3:27 pm
New Infuse Indications for OLIF25/OLIF51/ALIF
Oral Presentations

Learning Objectives: Upon completion of this session, participants will be able to:

- Analyze the findings of novel neurosurgical studies; critique the design and methodology of these studies.
- List important areas for further knowledge development and research.
- Identify the most important ongoing clinical trials.

3:30 – 4:30 pm Pacifica Ballroom 7

The Top 10 Abstracts & Awards of 2016

Moderators: R. John Hurlbert, Charles A. Sansur

3:30 – 3:34 pm

J.A.N.E. Award
100 Effect of Complications Within 90 days on Patient-reported Outcomes at 3 Months and 12 Months Following Elective Surgery for Degenerative Lumbar Pathology
Scott L. Parker, Silky Chotai, Ahilan Sivaganesan, John Alexander Sielatycki, Matthew J. McGirt, Clinton J. Devlin

3:34 – 3:36 pm

Discussant: Daniel K. Resnick

3:36 – 3:40 pm

Mayfield Basic Science Award
101 BRAF Alteration Status and the Histone H3F3A Gene K27M Mutation Segregate Spinal Cord Astrocytoma Histology

3:40 – 3:42 pm

Discussant: Ziya Gokaslan

3:42 – 3:46 pm

Mayfield Clinical Science Award
102 Cost Utility Analysis of the Cervical Artificial Disc Versus Fusion for the Treatment of Two-level Symptomatic Degenerative Disc Disease: Five-year Follow-up
Jared D. Ament, Zhuo Yang, Pierce D. Nunley, Marcus B. Stone, Darrin J. Lee, Kee Duk Kim
3:46 — 3:48 pm  
**Discussant:** Joseph Cheng

3:48 — 3:50 pm  
Questions and Answers

3:50 — 3:54 pm  
**Kline Peripheral Nerve Top Abstract**  
103 Intravital Confocal Spectral Microscopy with Solvatochromic Dyes for the Detection of Subtle Changes in Schwann Cell Myelin Lipid Composition: Implications for the Study of Remyelination  
Joey K. Grochmal, Wulin Teo, Hardeep Ghambir, Ranjan Kumar, Jo Anne Stratton, Raveena Dhaliwal, Craig Brideau, Peter K. Stys, Rajiv Midha

3:54 — 3:56 pm  
**Discussant:** Robert Spinner

3:56 — 4:00 pm  
**Charlie Kuntz IV Scholar**  
104 The Effect of Vancomycin Powder on Human Dural Fibroblast Culture and Its Implications for Dural Repair After Spine Surgery  
Ezequiel Goldschmidt, Jorge Rasmussen, Joseph D. Chabot, Gurpreet Surinder Gandhoke, Zachary Tempel, Emilía Luzzi, Lina Merlotti, Romina Proni, Monica Loressi, D. Kojo Hamilton, David O. Okonkwo, Adam S. Kanter, Peter C. Gerszten

4:00 — 4:02 pm  
**Discussant:** Charles L. Branch

4:02 — 4:06 pm  
**Charlie Kuntz IV Scholar**  
105 Intraoperative O–arm® Imaging Versus Stimulus–evoked Electromyography for Evaluation of Pedicle Screw Breaches: A Prospective Study of 1006 Screws in 164 Cases  
Ricky Raj Singh Kalra, Andrew T. Dailey

4:06 — 4:08 pm  
**Discussant:** Robert Heary

4:08 — 4:10 pm  
Questions and Answers

4:10 — 4:14 pm  
**Charlie Kuntz IV Scholar**  
106 Predictive Value of Intraoperative Neurophysiological Monitoring During Spine Surgery: A Prospective Analysis of 4489 Consecutive Patients  
Gurpreet Surinder Gandhoke, Jaspreet Kaur, Parthasarthy Thirumala, Zachary J. Tempel, Jeffrey Balzer, Donald Crammond, William Donaldson, Ill, David O. Okonkwo, Adam S. Kanter
MEETING AGENDA

THURSDAY

4:14 – 4:16 pm
Discussant: R. John Hurlbert

4:16 – 4:20 pm
Charlie Kuntz IV Scholar
107 Diffusion Tensor Imaging in a Large Series of CSM Patients Correlates with Long–term Functional Outcome
Hesham M. Soliman, Avinash Rao, Brian Schmit, Matt Budde, Marjorie C. Wang, Shekar N. Kurpad

4:20 – 4:22 pm
Discussant: Charles A. Sansur

4:22 – 4:26 pm
Charlie Kuntz IV Scholar
108 Diffusion Basis Spectrum Imaging Detects and Differentiates Axonal and Myelin Injury From Inflammation in Spinal Cord Injury
Rory K.J. Murphy, Peng Sun, Paul Gamble, Sheng–Kwei Song, Wilson Z. Ray

4:26 – 4:28 pm
Discussant: Sanjay Dhall

4:28 – 4:30 pm
Questions and Answers

2:00 – 5:30 pm  Coral Sea 1/2
Peripheral Nerve Surgery: Case–Based Approach and Review

Moderators: Rajiv Midha, Robert J. Spinner

Learning Objectives: Upon completion of this course, participants will be able to:

- Describe a systematic approach to patients with a wide range of peripheral nerve disorders.
- Develop a non-operative or operative management for these conditions.
- Discuss the advantages and disadvantages and expected outcomes of various surgical techniques.

2:00 – 2:10 pm
Clinical Approach to the Peripheral Nerve
Robert J. Spinner
2:10 – 2:20 pm  
**Fundamentals of Nerve Injury and Regeneration**  
Holly Gilmer

2:20 – 2:40 pm  
**Upper Extremity Entrapments**  
Mark A. Mahan

2:40 – 3:00 pm  
**Brachial Plexus Injury**  
Gregory R. Trost

3:00 – 3:20 pm  
**Lower Extremity Entrapments**  
Marie-Noelle Hebert-Blouin

3:20 – 3:40 pm  
**Beverage Break and Discussion**

3:40 – 4:00 pm  
**Injury and Repair**  
Helene Khuong

4:00 – 4:20 pm  
**Nerve Tumors**  
Kimberly Harbaugh

4:20 – 4:40 pm  
**Pain**  
Allan J. Belzberg

4:40 – 5:00 pm  
**Hot Seat Cases**  
Allan D. Levi

5:00 – 5:15 pm  
**Management of Peripheral Nerve Tumors—Presentation of Cases**  
Ketan Ishwarlal Desai

5:15 – 5:30 pm  
**Management of Peripheral Nerve Trauma—Presentation of Cases**  
Sumit Sinha
Charlie Kuntz IV Scholar Platform Presentations I

Moderators: John E. O’Toole, Paul Park

4:30 — 4:34 pm
109 Graft Subsidence as a Predictor of Revision Surgery Following Stand-alone Lateral Lumbar Interbody Fusion
Zachary Tempel, David Michael Panczykowski, Nathan Zwagerman, Gurpreet Surinder Gandhoke, Ezequiel Goldschmidt, D. Kojo Hamilton, David O. Okonkwo, Adam S. Kanter

4:34 — 4:36 pm
Discussant: William R. Taylor

4:36 — 4:40 pm
110 Symptomatic Adjacent Segment Degeneration After Anterior Cervical Discectomy and Fusion: A Long-term MRI Analysis
Marcus D. Mazur, Brian Burnett, Lubdha Shah, Andrew T. Dailey, Joel D. MacDonald

4:40 — 4:42 pm
Discussant: Michael P. Steinmetz

4:42 — 4:46 pm
111 Epigenetic Profiling Reveals a Unique Histone Code in Chordoma
Nelson Moussazadeh, Yupeng Zheng, Joshua Sommer, Ilya Laufer, Neil L. Kelleher, Cameron Brennan

4:46 — 4:48 pm
Discussant: Paul Park

4:48 — 4:52 pm
Questions and Answers

4:52 — 4:56 pm
112 Cranial Center of Mass Alignment May Influence Proximal Junctional Kyphosis in the Setting of Normal Sagittal Vertical Axis
Randall B. Graham, Jamal McClendon, Patrick Alexander Sugrue, Timothy R. Smith, Sara Thompson, Tyler R. Koski

4:56 — 4:58 pm
Discussant: Jens Chapman
4:58 — 5:02 pm
113 Aquaporin–1 Expression in Herniated Human Lumbar Intervertebral Discs
Tianyi Niu, Haydn Hoffman, Morteza Modaber, Daniel C. Lu

5:02 — 5:04 pm
Discussant: Andrew T. Dailey

5:04 — 5:08 pm
114 Timing and Risks of Chemoprophylaxis Following Spinal Surgery: A Single Center Experience with 6870 Patients
Ekamjeet Dhillon, Ryan Khanna, Helena Roberts, Zachary A. Smith, Nader S. Dahdaleh

5:08 — 5:10 pm
Discussant: Adam S. Kanter

5:10 — 5:14 pm
Questions and Answers

5:14 — 5:18 pm
115 Annular Repair Using High–density Collagen Gel Seeded with Fibrochondrocytes in a Rat Model
Brenton Pennicooke, Yu Moriguchi, Roger Hartl, Lawrence J. Bonassar, Brandon Borde

5:18 — 5:20 pm
Discussant: John E. O’Toole

5:20 — 5:24 pm
116 Does Side Matter: Correction, Outcomes and Complications When Approaching the Lateral Curve via the Concavity or Convexity in Adult Degenerative Scoliosis
Alp Ozpinar, Zachary Tempel, Matthew Pease, Nima Alan, Ezequiel Goldschmidt, D. Kojo Hamilton, David O. Okonkwo, Adam S. Kanter

5:24 — 5:26 pm
Discussant: Peter D. Angevine

5:26 — 5:30 pm
Questions and Answers
4:30 — 5:30 pm Pacifica Ballroom 8/9

Charlie Kuntz IV Scholar Platform Presentations II

Moderators: Erica Fay Bisson, Langston T. Holly

4:30 — 4:34 pm
117 The Development of a Novel Risk Assessment Algorithm for Adverse Event Prediction in Spine Surgery
Anand Veeravagu, Christian Swinney, Amy Li, Todd Alamin, Jon Park, Atman Desai, Serena Hu, Ivan Cheng, John K. Ratliff

4:34 — 4:36 pm
Discussant: Daniel J. Hoh

4:36 — 4:40 pm
118 Risk factors for 30–day Re–operation and 90–day Readmission: Analysis from the National Neurosurgery Quality and Outcomes Database Lumbar Spine Registry
Todd Douglas Vogel, Junichi Ohya, Rishi Kumar Wadhwa, Leah Y. Carreon, Anthony L. Asher, Steven D. Glassman, Praveen V. Mummaneni

4:40 — 4:42 pm
Discussant: Michele Marie Johnson

4:42 — 4:46 pm
119 Comparison of Outcomes Following Laminoplasty Versus Laminectomy with Posterior Spinal Fusion for Cervical Spondylotic Myelopathy: Matched Cohorts of Regional Sagittal Balance
Darryl Lau, Ethan A. Winkler, Khoi Duc Than, Dean Chou, Praveen V. Mummaneni

4:46 — 4:48 pm
Discussant: Hiroshi Nakagawa

4:48 — 4:52 pm
Questions and Answers

4:52 — 4:56 pm
120 Prospective Series Analyzing Preoperative Prealbumin Levels and Risk of Postoperative Surgical Site Infection
David J. Salvetti, Zachary Tempel, David Michael Panczykowski, Wappler Alexandra, Adam S. Kanter, David O. Okonkwo

4:56 — 4:58 pm
Discussant: William Charles Welch
4:58 – 5:02 pm
121 The Relationship Between Preoperative Clinical Presentation and Quantitative MRI Features in Patients with Degenerative Cervical Myelopathy
Aria Nouri, Lindsay Tetreault, Kristian Dalzell, Juan Jose Zamorano, Michael G. Fehlings

5:02 – 5:04 pm
Discussant: Langston T. Holly

5:04 – 5:08 pm
122 Contribution of Lordotic Correction on C5 Palsy Following Cervical Laminectomy and Fusion
Jacob Cherian, Rory R. Mayer, Kareem Haroun, Lona Winnegan, Ibrahim Omeis

5:08 – 5:10 pm
Discussant: Daniel C. Lu

5:10 – 5:14 pm
Questions and Answers

5:14 – 5:18 pm
123 Utility of Nonpenetrating Titanium Clips for Dural Closure During Spinal Surgery to Prevent Postoperative Cerebrospinal Fluid Leakage
Kiyoshi Ito

5:18 – 5:20 pm
Discussant: Richard G. Fessler

5:20 – 5:24 pm
124 Comparing Short–term Outcomes of Inpatient Versus Outpatient Single Level Anterior Cervical Discectomy and Fusion: An Analysis of 4,926 Patients Using the ACS–NSQIP Database
Ryan Khanna, Robert B. Kim, Sandi Lam, George R. Cybulski, Zachary A. Smith, Nader S. Dahnaleh

5:24 – 5:26 pm
Discussant: Zoher Ghogawala

5:26 – 5:30 pm
Questions and Answers
MEETING AGENDA

THURSDAY

4:30 — 5:30 pm  Pacifica Ballroom 10

Charlie Kuntz IV Scholar Platform Presentations III

Moderators:  Eve C. Tsai, Kris Radcliff
Discussant:  Sigurd Berven, Michael W. Groff, John J. Knightly, Frank La Marca, Kris Radcliff, John K. Ratliff, Gerald E. Rodts, Brett Alan Schlifka, Cheerag D. Upadhyaya

4:30 — 4:34 pm
125 Integrating Business and Medicine: Cost Analysis of Spinal Fusions at the University of Minnesota
Catherine Miller, Daniel James Guillaume

4:34 — 4:36 pm
Discussant:  John J. Knightly

4:36 — 4:40 pm
126 An In Vitro Biomechanical Model of Segmental Thoracic Fixation for Spinal Deformity Correction
Alexander Tuchman, Alexander William Turner, Melodie Metzger, Frank Acosta

4:40 — 4:42 pm
Discussant:  Frank La Marca

4:42 — 4:46 pm
127 Progressive Improvement in Sagittal Balance Following Surgical Correction of Adult Spinal Deformity
Michael Maurice McDowell, Zachary Tempel, Gurpreet Surinder Gandhoke, Nathan Zwagerman, Ezequiel Goldschmidt, D. Kojo Hamilton, Adam S. Kanter, David O. Okonkwo

4:46 — 4:48 pm
Discussant:  Kris Radcliff

4:48 — 4:50 pm
Questions and Answers

4:50 — 4:54 pm
128 The Effects of High–dose Parathyroid Hormone (1-34) on Posterolateral Lumbar Spinal Fusion in a Rabbit Model
Benjamin D. Elder, Christina Holmes, Sheng–fu Larry Lo, Wataru Ishida, John Locke, Maritza Taylor, Timothy F. Witham

4:54 — 4:56 pm
Discussant:  Brett Alan Schlifka
4:56 — 5:00 pm  
**129 C5 Palsy After Cervical Decompression: Socioeconomic Cost Analysis and Implications for Treatment**  
Rory R. Mayer, Jacob Cherian, Lona Winnegan, Ibrahim Omeis

5:00 — 5:02 pm  
**Discussant:** Michael W. Groff

5:02 — 5:06 pm  
**130 Spine Surgery in Octogenarians: Analysis of 14,108 Patients in the MarketScan Longitudinal Database**  
Doniel Drazin, Carlito Lagman, Beatrice Ugiliweneza, Lindsey Ross, Terrence T. Kim, J. Patrick Johnson, Maxwell Boakye

5:06 — 5:08 pm  
**Discussant:** Gerald E. Rodts

5:08 — 5:10 pm  
**Questions and Answers**

5:10 — 5:14 pm  
**131 Spinal Fusion for Pediatric Spondylolisthesis: National Trends, Complications, and Short-term Outcomes**  
Kavelin Rumalla, Chester Yarbrough, Ian G. Dorward

5:14 — 5:16 pm  
**Discussant:** Sigurd Berven

5:16 — 5:20 pm  
**132 Rate of Peri-operative Neurological Complications After Surgery for Cervical Spinal Cord Stimulation**  
Andrew Kai–Hong Chan, Ethan A. Winkler, Line Jacques

5:20 — 5:22 pm  
**Discussant:** John K. Ratliff

5:22 — 5:26 pm  
**133 Early Post-operative Outcomes for Elderly Patients Undergoing Single Level Decompression for Lumbar Disk Herniation**  
Nitin Agarwal, Arpan V. Prabhu, Bryan Lieber, Jenson K. Henry, Monir Tabosa, David O. Okonkwo

5:26 — 5:28 pm  
**Discussant:** Cheerag D. Upadhyaya

5:28 — 5:30 pm  
**Questions and Answers**
The following companies have provided an educational grant in support of the Annual Meeting:

DePuy Synthes
Globus Medical
Medtronic
NuVasive
Stryker
Friday, March 18, 2016

6:30 – 7:30 am  Pacifica Ballroom 7 Foyer
Complimentary Continental Breakfast

6:30 am – 6:00 pm  Registration North Desk
Registration

Deformity Breakout
7:00 – 9:00 am  Pacifica Ballroom 8/9

Moderators: D. Kojo Hamilton, Frank La Marca
Speakers: Kai-Ming G. Fu, Munish Gupta, Roger Hartl, Virginie Lafage, David O. Okonkwo, Paul Park

Learning Objectives: Upon completion of this session, participants will be able to:
• Discuss the different treatment options for spinal deformity cases.
• Discuss deformity classification systems and surgical candidacy.
• Review minimally invasive options available in the treatment of spinal deformity.
• Recognize the challenges in spinal deformity management and best practices available.

7:00 – 8:00 am  Deformity: Oral Platform Presentations

7:00 – 7:04 am
134 The Economic Impact of Revision Surgery for Proximal Junctional Failure After Adult Spinal Deformity Surgery: A Cost Analysis of 57 Operations in a 10–year Experience at a Major Deformity Center
Alexander Theologis, Liane Miller, Matt Callahan, Darryl Lau, Corinna Zygourakis, Justin K. Scheer, Shane Burch, Murat Pekmezci, Dean Chou, Bobby Tay, Praveen V. Mummaneni, Sigurd Berven, Vedat Deviren, Christopher P. Ames
7:04 – 7:08 am
135 Clinical and Radiographic Parameters Associated with Best vs. Worst Clinical Outcomes in Minimally Invasive Deformity Surgery
Khoi Duc Than, Paul Park, Kai–Ming G. Fu, Stacie Nguyen, Michael Y. Wang, Dean Chou, Pearce Nunley, Neel Anand, Richard G. Fessler, Christopher I. Shaffrey, Shay Bess, Behrooz A. Akbarnia, Vedat Deviren, Juan S. Uribe, Frank La Marca, Adam S. Kanter, David O. Okonkwo, Gregory M. Mundis, Jr., Praveen V. Mummaneni

7:08 – 7:12 am
136 Development of Validated Computer-based Preoperative Predictive Model for Proximal Junction Failure (PJF) or Clinically Significant PJK with 86 Percent Accuracy Based on 510 ASD Patients with Two-year Follow–up

7:12 – 7:16 am
137 Comparison of Complications and Clinical and Radiographic Outcomes Between Non–obese and Obese Patients with Adult Spinal Deformity Undergoing Minimally Invasive Surgery
Paul Park, Michael Y. Wang, Stacie Nguyen, Gregory M. Mundis, Jr., Frank La Marca, Juan S. Uribe, Neel Anand, David O. Okonkwo, Adam S. Kanter, Richard G. Fessler, Robert Eastlack, Dean Chou, Vedat Deviren, Pierce D. Nunley, Christopher I. Shaffrey, Praveen V. Mummaneni

7:16 – 7:20 am
138 The Impact of Minimally Invasive Spinal Deformity Surgery on ICU Stay and Hospital Length of Stay
Dean Chou, Michael Y. Wang, Kai–Ming G. Fu, Gregory M. Mundis, Jr., Christopher I. Shaffrey, David O. Okonkwo, Adam S. Kanter, Vedat Deviren, Juan S. Uribe, Pierce D. Nunley, Neel Anand, Paul Park, Praveen V. Mummaneni

7:20 – 7:24 am
139 Bicortical S1 Screw Fixation May Obviate the Need for Iliac Screws in Minimally Invasive Surgery for Adult Spinal Deformity (ASD)
Joseph Zavatsky, Brandon Cook, David Briski

7:24 – 7:28 am
140 TEamS: An Algorithm for Fusion Level Selection in Idiopathic Adolescent Scoliosis Surgery
Ryan Gregory Nazar
7:28 – 7:32 am
141 Can Measurements on Cervical Radiographs Predict Concurrent Thoracolumbar Deformity and Provide a Threshold for Acquiring Full–length Spine Radiographs?

7:32 – 7:36 am
142 Development of New Onset Cervical Deformity in Non–operative ASD Patients with Three-year Follow–up

7:36 – 7:40 am
143 Novel Cervical Angular Measures Account for Both Upper Cervical Compensation and Sagittal Alignment

7:40 – 7:44 am
144 Assessment of Impact of Long–cassette Standing X–rays on Surgical Planning for Cervical Pathology: An International Survey of Spine Surgeons

7:44 – 7:48 am
145 Regional Thoracic and Lumbar Sagittal Cobb Angle Changes and UIV Determine Evolution of Cervical Alignment After ASD Surgery: Series of 171 Patients with Two-year Follow–up
7:48 – 7:52 am
146 Focal and Dynamic Cervical Alignment Pathology Correlates with Myelopathy Severity in Cervical Deformity Patients

7:52 – 7:56 am
147 Re-operation After Long-segment Fusions for Adult Spinal Deformity: The Impact of Extending Beyond the Lumbar Spine

7:56 – 8:00 am
148 The Positive Impact of Chiari Type I Decompression in the Management of Scoliosis Without Syringomyelia
Silvia Gesheva, Lori A. McBride

8:00 – 8:30 am
Debate: Optimal Approach to Avoid Proximal Junctional Kyphosis
8:00 – 8:08 am
MIS: Minimize Trauma to Minimize Failure
Paul Park

8:08 – 8:16 am
OPEN: Maximize Fusion Mass to Minimize Failure
Munish Gupta

8:16 – 8:24 am
HYBRID: A Happy Medium Exists
David O. Okonkwo

8:24 – 8:30 am
Panel Discussion

8:30 – 8:38 am
Challenges in Adult Spinal Deformity Classification: Is There a Universal Solution?
Virginie Lafage

8:38 – 8:46 am
Challenges in Adult Spinal Deformity Surgical Candidacy: The MISDEF Solution
Kai-Ming G. Fu
8:46 – 8:54 am  
**Challenges in Image Guidance for Adult Spinal Deformity: What Solutions Exist?**  
Roger Hartl

8:54 – 9:00 am  
**Panel Discussion**

### Trauma Breakout

7:00 – 9:00 am  
**Pacifica Ballroom 10**

**Moderators:** Beejal Y. Amin, Scott A. Meyer  
**Speakers:** Edward C. Benzel, Sanjay S. Dhall, Michael G. Fehlings, James S. Harrop, Allan D. Levi, Michael Y. Wang

**Learning Objectives:** Upon completion of this session, participants will be able to:

- Assess the various forms of spine trauma treatment protocols.
- Identify best surgical practices for patients with traumatic spine injuries.
- Review the risks and benefits of hypothermia when used to treat spinal cord injury.
- Discuss utility of minimally invasive options when treating spine fractures.

7:00 – 8:00 am  
**Trauma and Spinal Cord Injury: Oral Platform Presentations**

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 am</td>
<td><strong>149 Epidemiology of “Stingers” in NCAA Football, 2009/10–2014/15 Academic Years</strong></td>
<td>Scott L. Zuckerman, James Green, Sara L. Dalton, Aristaque Djoko, Dustin Folger, Zachary Y. Kerr, Joseph S. Cheng</td>
</tr>
<tr>
<td>7:08 am</td>
<td><strong>151 Morbidity and Mortality Associated with Operative Management of Traumatic C2 Fractures in Octogenarians</strong></td>
<td>Sanjay S. Dhall, John K. Yue, Ethan A. Winkler, Praveen V. Mummaneni, Geoffrey T. Manley, Phiroz E. Tarapore</td>
</tr>
<tr>
<td>7:12 am</td>
<td><strong>152 Reliability of Treating Asymptomatic Traumatic</strong></td>
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</tbody>
</table>
Type II Dens Fractures in Patients Over Age 80: A Retrospective Series
Eric N. Momin, Jared Fridley, Lona Winnegan, Ibrahim Omeis

7:16 — 7:20 am
153 Perioperative Morbidity and Mortality After Lumbar Trauma in the Elderly
Ethan A. Winkler, John K. Yue, Geoffrey T. Manley, Sanjay S. Dhall, Phiroz E. Tarapore

7:20 — 7:24 am
154 Posterior Ligamentous Complex Injury as a Predictor of Re–operation for Thoracolumbar Burst Fractures
Royce Woodroffe, Logan Helland, Andrew James Grossbach, Patrick W. Hitchon

7:24 — 7:28 am
155 Alterations in Cortical Sensorimotor Connectivity Following Complete Cervical Spinal Cord Injury: A Prospective Resting–state fMRI Study

7:28 — 7:32 am
156 Efficacy and Safety of Riluzole in Acute Spinal Cord Injury (SCI): Rationale and Design of AOSpine Phase III Multi–center Double Blinded Randomized Controlled Trial (RISCIS)
Michael G. Fehlings, Branko Kopjar, Robert G. Grossman

7:32 — 7:36 am
157 Neurologic Outcome following Implantation of a Neuro–spinal Scaffold into the Lesion Cavity in Acute Thoracic Complete Spinal Cord Injury: Results of a Pilot Study
Nicholas Theodore, Domagoj Coric, Patrick C. Hsieh, Kee Duk Kim

7:36 — 7:40 am
158 Effects of Ozone on Spinal Cord Recovery via Wnt/ B–Catenin Pathway Following Spinal Cord Injury in Rats
Selin Tural Emon, Serap Uslu, Elif Ilgaz Aydínlar, Arzu Irban, Umit Ince, Metin Orakdogen, Guldal Gulec–Suyen
7:40 – 7:44 am
159 A Novel Non–invasive Method to Produce Pressure Ulcers of Varying Severity in a Spinal Cord Injury Rat Model

7:44 – 7:48 am
160 Postoperative Intramedullary Lesion length on T2W MRI Following Decompressive Surgery has a Negative Effect on Neurological Recovery and Grade Conversion in Cervical Spinal Cord Injury Patients with AIS Grades A–C
Bizhan Aarabi, David Hersh, Elizabeth J. Le, Charles A. Sansur, David M. Ibrahimi, Cara Díaz, Jennifer M. Massetti, Noori Akhtar–Danesh

7:48 – 7:52 am
161 Percutaneous Instrumentation Without Arthrodesis for Treatment of Thoracolumbar Flexion–Distraction Injuries
Jason K. Chu, Rima Sestokas Rindler, Gustavo Pradilla, Gerald E. Rodts, Jr., Faiz U. Ahmad

7:52 – 7:56 am
162 Anterolateral or Posterior Approach for Thoracolumbar Burst Fractures
Logan Helland, Andrew James Grossbach, Patrick W. Hitchon

7:56 – 8:00 am
163 The Techniques of Ventral Reduction and Stabilization for Cervical Facet Dislocation: Early Experience and Review of Literature
Hossam Ibrahim Maaty

8:00 – 8:20 am
Debate: Thoracolumbar Burst Fractures

8:00 – 8:08 am
OPEN: Stabilize and Fuse: Go Long or Go Home!
Edward C. Benzel

8:08 – 8:16 am
MIS: Short Segment Percutaneous Fixation: Short and Sweet!
Michael Y. Wang

8:16 am – 8:20 am
Panel Discussion
8:20 – 8:28 am
Odontoid Fractures in the Elderly: Surgery or Brace?
Sanjay S. Dhall

8:28 – 8:36 am
Compression Fractures in the Elderly: Does Surgery Help?
James S. Harrop

8:36 – 8:40 am
Panel Discussion

8:40 – 8:48 am
Early Surgery for Acute SCI: How Fast Do We Need To Be?
Michael G. Fehlings

8:48 – 8:56 am
Hypothermia: A Viable Option to Treat Acute SCI?
Allan D. Levi

8:56 – 9:00 am
Panel Discussion

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Tumor Breakout

7:00 – 9:00 am  Pacifica Ballroom 11

Moderators: John Chi, Ilya Laufer, John H. Shin
Speakers: Nduka M. Amankulor, Mark H. Bilsky, Dean Chou, Ziya L. Gokaslan, Ehud Mendel, Laurence D. Rhines

Learning Objectives: Upon completion of this session, participants will be able to:
- Discuss surgical options for spinal metastasis.
- Assess instability challenges in spine tumor surgery.
- Identify the role of minimally invasive techniques in spine tumor surgery.

7:00 – 8:00 am
Tumor: Oral Platform Presentations

7:00 – 7:04 am
164 Costs and Readmissions Rates for the Surgical Resection of Primary and Metastatic Spinal Tumors: A Comparative Analysis of 181 Patients
Darryl Lau, Andrew Kai–Hong Chan, Alexander Theologis, Dean Chou, Praveen V. Mummaneni, Shane Burch, Sigurd Berven, Vedat Deviren, Christopher P. Ames

7:04 – 7:08 am
165 Surgical Outcomes of Metastatic Melanoma to the Spine in the Modern Era of Adjuvant Therapies
Ganesh Shankar, Vijay Yanamadala, Kevin Oh, John H. Shin

7:08 – 7:12 am
166 Predictive Factors for Survival in Surgical Series
of Symptomatic Metastatic Epidural Spinal Cord Compression: A Prospective North American Multi–center Study in 142 patients

7:12 – 7:16 am
167 Total En Bloc Spondylectomy of Aggressive Vertebral Hemangiomas Is Associated With Better Recurrence Free Survival When Compared With Piecemeal Resection
Mark E. Oppenlander, Patricia Haylock–Vize, David Choi

7:16 – 7:20 am
168 Survival and Clinical Outcomes in Patients with Metastatic Epidural Spinal Cord Compression: Results from the AOSpine Prospective Multi–centre Study of 142 Patients

7:20 – 7:24 am
169 Clinical and Pathologic Outcomes Post–resection of Intramedullary Spinal Cord Tumors
Nardin Samuel, Carlo Santaguida, Lindsay Tetreault, Eric M. Massicotte, Michael G. Fehlings

7:24 – 7:28 am
170 Quality of Life Outcomes Following Resection of Adult Intramedullary Spinal Cord Tumors
Roy Xiao, Jacob A. Miller, Navin C. Sabharwal, Kalil G. Abdullah, Daniel Lubelski, Thomas E. Mroz, Edward C. Benzel

7:28 – 7:32 am
Kareem Haroun, Danielle Guffey, Charles Minard, Jacob Cherian, Ibrahim Omeis

7:32 – 7:36 am
172 Intraoperative Monitoring of Bulbocavernous Reflex for Tumors in Conus Medullaris and Cauda Equina
Tetsuryu Mitsuyama, Motoo Kubota, Takakazu Kawamata
7:36 – 7:40 am
173 Occipitocervical Stabilization of Tumor–associated Craniovertebral Junction Instability
Fabiana M. Kreines, Ilya Laufer, Mark H. Bilsky

7:40 – 7:44 am
174 Surgical Treatment of Aggressive Vertebral Hemangiomas with Epidural Extension
Viren Sahai Vasudeva, Yuri A. Pompeu, Mitchel Harris, John Chi, Michael W. Groff

7:44 – 7:48 am
175 Posterolateral Sulcus (DREZ) Approach for Spinal Intramedullary Tumor: Technical Note
Toshihiro Takami

7:48 – 7:52 am
176 Transpedicular Laser Ablation of T1 Vertebral Metastasis—One-year Follow-up
Karthik H. Madhavan, Lee Onn Chieng, Steven Vanni

7:52 – 7:56 am
177 RASMA, A Decision–making Approach to the Surgical Treatment of Spinal Intradural Tumors
Harish Babu, Doniel Drazin, J. Patrick Johnson

7:56 – 8:00 am
178 The Extreme Lateral Approach for Treatment of Thoracic and Lumbar Vertebral Body Metastases
John Serak, Allan D. Levi, Steve Vanni

8:00 – 8:22 am
Debate: Surgical Options for Spinal Metastasis

8:00 – 8:08 am
Vertebrectomy is the Best Option: Go Big or Go Home!
Ziya L. Gokaslan

8:08 – 8:16 am
Separation Surgery is a Safe Option: Less is More!
Mark H. Bilsky

8:16 – 8:22 am
Panel Discussion

8:22 – 8:30 am
Instability Challenges in Spine Tumor Surgery
Nduka M. Amankulor

8:30 – 8:38 am
Is There a Role for MIS in Spine Tumor Surgery?
Dean Chou
8:38 — 8:46 am
Complication Avoidance in Spine Tumor Surgery
Laurence D. Rhines

8:46 — 8:54 am
The Cost of Spine Tumor Surgery
Ehud Mendel

8:54 — 9:00 am
Panel Discussion

MIS Breakout
7:00 — 8:00 am  Pacifica Ballroom 12
Moderators: Aaron J. Clark, Joseph M. Zavatsky

Oral Presentations Learning Objectives: Upon completion of this session, participants will be able to:
- Analyze the findings of novel neurosurgical studies; critique the design and methodology of these studies.
- List important areas for further knowledge development and research.
- Identify the most important ongoing clinical trials.

7:00 — 7:04 am
179 Randomized Controlled Trial of Minimally Invasive Sacroiliac Joint Fusion Using Triangular Titanium Implants vs. Non-surgical Management for Sacroiliac Joint Dysfunction
David W. Polly, Jr., Daniel Cher, Kathryn Wine, Peter Whang, Clay Frank, Harry Lockstadt, Charles Frederick Harvey, Jonathan N. Sembrano

7:04 — 7:08 am
180 Lateral Lumbar Interbody Fusion with Modular Plate Fixation: Initial Experience with a Novel Technology. Intra-op and One-year Outcomes
Ryan Peter Denhaese, Clint Hill; Brandon Strenge, Chris Ferry, Brieta Bejin, Camille Moore, Kim Martin, Sarah Martineck

7:08 — 7:12 am
181 Femoral and Obturator Nerve Injury After Lateral Retropertoneal Transpsoas Approach: Prognostic Indicators for Recovery
Andrew C. Vivas, Konrad Bach, Stephen Reintjes, Jr., Yusef Imani Mosley, Chun-Po Yen, Joshua Marshall Beckman, Naomi Abel, Juan S. Uribe
7:12 — 7:16 am
182 Minimally Invasive Lateral Retroperitoneal Transpsoas Interbody Fusion at L4–5 level—Long–term Clinical and Imaging Outcomes
Chun–Po Yen, Stephen Lewis Reintjes, Andrew C. Vivas, Joshua Marshall Beckman, Yusef Imani Mosley, Konrad Bach, Juan S. Uribe

7:16 — 7:20 am
183 Percutaneous Lumbar Fusion: Technique, Indications, and Early Outcomes
Deepak Awasthi, Peter G. Liechty

7:20 — 7:24 am
184 Socioeconomic Impact of a Learning Curve on Minimally Invasive Transforaminal Lumbar Interbody Fusions
Luis M. Tumialan, Angelina N. Garvin, Nicholas Theodore

7:24 — 7:28 am
185 Awake MIS TLIF Without General Anesthesia: Initial Clinical and Radiographic Results with One–year Follow–up
Michael Y. Wang, Jay Grossman

7:28 — 7:32 am
186 Use of Three–dimensional Computed Tomography–based Navigation in Minimally Invasive Lateral Lumbar Interbody Fusion
Jacob R. Joseph, Brandon Smith, Rakesh Patel, Paul Park

7:32 — 7:36 am
187 Dynamic Stabilization for L4/5 Spondylolisthesis: Comparison with Minimally Invasive Transforaminal Lumbar Interbody Fusion for More Than Two–years of Follow–up

7:36 — 7:40 am
188 Minimally Invasive Placement of Non–cannulated Lumbar Pedicle Screws: A Technical Description and Initial Results
Christian Sikorski

7:40 — 7:44 am
189 Description of Microsurgical Landmarks in the Microscope Stage of Minimally Invasive Transforaminal Lumbar Interbody Fusion: Learning the Microanatomical Orientation
Javier Quillo–Olvera
7:44 – 7:48 am
190 Early Experience with Endoscopic Revision of Lumbar Arthrodesis Constructs
Lynn McGrath Jr., Karthik H. Madhavan, Lee Onn Chieng, Michael Y. Wang, Christoph Paul Hofstetter

7:48 – 7:52 am
191 Lumbar Plexus Anatomy in Relation to the Lateral Retropertitoneal Transpsoas Approach: A Detailed Description of Anatomic Variability
Shane Abdunnur, Daniel Hwan Kim

7:52 – 7:56 am
192 Adjacent Segment Disease in Minimally Invasive Lateral Retropertitoneal Interbody Fusions
Stephen Lewis Reintjes, Konrad Bach, Chun–Po Yen, Joshua Marshall Beckman, Yusef Imani Mosley, Andrew C. Vivas, Juan S. Uribe

7:56 – 8:00 am
193 Minimally–invasive Placement of Spinal Cord Stimulator Paddle Electrodes is Associated with Improved Perioperative Experience Among Neuropathic Pain Patients
Mohammed F. Shamji, Darcia Paul, Alina Shcharinsky

Peripheral Nerve & Laboratory Investigations Breakout

8:00 – 9:00 am Pacifica Ballroom 12

Moderators: Isaac O. Karikari, Eric L. Zager

Oral Presentations Learning Objectives: Upon completion of this session, participants will be able to:

- Analyze the findings of novel neurosurgical studies; critique the design and methodology of these studies.
- List important areas for further knowledge development and research.
- Identify the most important ongoing clinical trials.

8:00 – 8:04 am
194 Targeted Fascicular Biopsy of the Sciatic Nerve
Stepan Capek, Kimberly K. Amrami, P. James B. Dyck, Robert J. Spinner

8:04 – 8:08 am
195 Innervation of the Psoas Major Muscle
8:08 – 8:12 am
196 Surgical Results of Common Peroneal Nerve Neuroplasty at Lateral Fibular Neck
Kevin Swong, Vikram C. Prabhu

8:12 – 8:16 am
197 The Subparaneurial Compartment: A New Concept in the Clinicoanatomic Classification of Peripheral Nerve Lesions
Nikhil K Prasad, Stepan Capek, Godard de Ruiter, Kimberly K. Amrami, Robert J. Spinner

8:16 – 8:20 am
198 Sciatic Nerve Endometriosis Explained by Perineural Spread
Stepan Capek, Ana C. Siquara de Sousa, Benjamin M. Howe, Mark E. Jentoft, Kimberly K. Amrami, Robert J. Spinner

8:20 – 8:24 am
199 Intermittent Low Back Pain Attributable to Superior Cluneal Nerve Entrapment Neuropathy
Yasuhiro Chiba

8:24 – 8:28 am
200 Diagnostic Quality of MRI Interpretation for Peripheral Nerve Sheath Tumors: Can Malignancy be Determined?
Michael Karsy, Jian Guan, Vijay Ravindra, Mark Alexander Mahan

8:28 – 8:32 am
201 Intervertebral Disc Regeneration Using Human Umbilical Cord Blood Stem Cell Therapy
Mick J. Perez–Cruet, Jared Brougham, Rasul Chaudhry, Christina Marie McKee, Naimisha Reddy Beeravolu

8:32 – 8:36 am
202 Elastic Modulus in the Selection of Spinal Implants
Robert F. Heary, Naresh K. Parvathreddy, Sujitha Sampath, Nitin Agarwal

8:36 – 8:40 am
203 Efficacy and Safety of a Novel Human Disc Progenitor Cell Therapy Treatment in Multiple Animal Models of Degenerative Disc Disease
Lara Ionescu Silverman, Galina Dullatova, Terry Tandeski, Kevin T. Foley

8:40 – 8:44 am
204 Specific Dissolution of Transthyretin (TTR) Amyloid Deposits in the Ligamentum Flavum of Patients with Lumbar Spinal Stenosis (LSS) by a Human Catalytic Antibody (catabody)
Saint–Aaron Morris, Stephanie Planque, Michele Marie Johnson, Paul Sudhir
8:44 – 8:48 am
205 Lateral Decubitus TLIF with a Medial–lateral Expandable Interbody Device: Biomechanical Analysis
Andrew Frank Cannestra, Mark D. Peterson, Thomas Roush, Justin V. Bundy, Alexander William Turner

8:48 – 8:52 am
206 T (brachyury) is Linked to a Mendelian Form of Neural Tube Defects in Humans
Ahmed Mustafa Alaqeel, Ranad Shaheen, Essam Alshail, Shinu Ansari, Farah Hindieh, Fowzan Alkuraya

8:52 – 8:56 am
207 Leveraging microRNAs for Spinal Cord Injury Repair
Suzanne Audrey Tharin, Victoria Lu, Verl Siththanandan, Nicole Gonzalez–Nava, Jessica MacDonald, Uwe Ohler, Lincoln Pasquina, Aaron Wheeler, Theo Palmer, Jeffrey Macklis

8:56 – 9:00 am
208 Characterization Intraspinal Pressure Following Traumatic Rodent Spinal Cord Injury
Zin Khaing, Lindsay Cates, Amanda Fischedick, Christoph Paul Hofstetter

Beverage Break and What’s New Session IV

9:00 – 9:45 am Exhibit Hall-Demo Theater
Pacifica Ballrooms 1-6

Moderators: Vassilios Dimopoulos, Wilson Zachary Ray

9:03 – 9:13 am
Maximizing Lumbar Lordosis with an articulating expandable TLIF Spacer
Faculty: Paul K. Kim

9:18 – 9:28 am
Elevate Spinal System – raising the standard inexpandable interbody cages
Faculty: Kevin Foley

9:33 – 9:43 am
The Importance of Sagittal Alignment and Intraoperative Assessment
Faculty: Juan S. Uribe
Scientific Session VI

9:45 – 10:45 am Pacifica Ballroom 7

Surgical Site Infections: Impact on the Patient, the Hospital, and You

Moderators: Bryan D. Bolinger, Eric A. Potts

Learning Objectives: Upon completion of this session, participants will be able to:

- Assess various treatment approaches to surgical site infections.
- Describe challenges of surgical site infection and its economic impact.
- Evaluate various pre and post-op measures to minimize surgical site infection.
- Review the significant role that nutrition plays in the development of surgical site infections.

9:45 – 10:00 am

Debate: Intraoperative Use of Vancomycin Powder to Prevent Surgical Site Infections

9:45 – 9:50 am
Decreases Infection!
Zoher Ghogawala

9:50 – 9:55 am
Decreases Fusion!
Joseph T. Alexander

9:55 – 10:00 am
Panel Discussion

10:00 – 10:08 am
Economic Impact of Surgical Site Infections
Joseph S. Cheng

10:08 – 10:16 am
Preoperative Measures to Prevent Surgical Site Infections
Bryan Bolinger

10:16 – 10:24 am
Nutrition and Surgical Site Infections
David O. Okonkwo

10:24 – 10:32 am
Intraoperative Measures that Influence Surgical Site Infections
Tyler R. Koski
MEETING AGENDA

10:32 – 10:40 am
Management of Surgical Site Infections
Charles L. Branch

10:40 – 10:45 am
Panel Discussion

Scientific Session VII
10:45 am – 12:15 pm  Pacifica Ballroom 7

New Payment Models: Bundling vs. Bungling

Moderators: John E. O‘Toole, Charles A. Sansur
Speakers: Joseph S. Cheng, John J. Knightly, Stephen L. Ondra, Daniel K. Resnick, Steve Shapiro, Shelly D. Timmons

Learning Objectives: Upon completion of this session, participants will be able to:
- Discuss new payment models in relation to spinal neurosurgery.
- Review the potential financial impact of these various payment models.
- Discuss how the various payment models effect the payers as well as the providers.
- Recognize the relationship between quality of care and patient satisfaction.

10:45 – 11:35 am
Debate: Impact of New Payment Models on Spine Care

10:45 – 11:00 am
The Payer Perspective
Stephen L. Ondra

11:00 – 11:15 am
The Health System Perspective
Steve Shapiro

11:15 – 11:30 am
The Provider Perspective
Joseph S. Cheng

11:30 – 11:35 am
Panel Discussion

11:35 – 12:15 pm
Current Challenges in Legislative Advocacy for Spine Care

11:35 – 11:45 am
Providers
Shelly D. Timmons
11:45 – 11:55 am  
**Navigating Quality and Cost in Spine Care**  
John J. Knightly

11:55 am – 12:05 pm  
**Relationship of Patient Satisfaction to Quality of Spine Care**  
Daniel K. Resnick

12:05 – 12:15 pm  
**Panel Discussion**

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**DSPN Business Meeting**

12:15 – 12:30 pm  
Pacifica Ballroom 7

*Presiding Officers:* Praveen V. Mummaneni, Marjorie C. Wang  
*Speakers:* R. John Hurlbert, Katie O. Orrico, Marjorie C. Wang, Michael Y. Wang, Christopher E. Wolfla

12:15 – 12:18 pm  
**Washington Committee Report**  
Katie O. Orrico

12:18 – 12:21 pm  
**Secretary’s Report**  
Marjorie C. Wang

12:21 – 12:24 pm  
**Treasurer’s Report**  
Michael Y. Wang

12:24 – 12:27 pm  
**Future Sites Committee Report**  
Christopher E. Wolfla

12:27 – 12:30 pm  
**Nominating Committee Report**  
R. John Hurlbert

12:30 – 2:00 pm  
Pacifica Ballroom 1-6  
Complimentary Lunch with Exhibitors
### Lunch Symposium I

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>12:30 – 2:00 pm</td>
<td><strong>AOA: Own the Bone®</strong> The Spine Practitioner Taking Ownership of the Bone $200</td>
</tr>
</tbody>
</table>
|               | **Moderators:** Paul A. Anderson, Justin S. Smith  
**Speakers:** Christopher P. Ames, Paul A. Anderson, Kyle J. Jeray, Tyler R. Koski, Justin S. Smith |
|               | **Description:** This symposium introduces Own the Bone® to the spine community to encourage spine practitioners caring for patients with osteoporosis to take ownership. The symposium emphasizes the use of diagnostic tests, initiating treatment, and providing leadership to develop fracture liaison programs. Further, the symposium reviews the pathophysiology of metabolic bone disease. The assessment of osteoporosis and the estimation of fracture risk are discussed. Although most spine practitioners will not provide pharmacologic management, the use of these agents and their effectiveness are reviewed so that patients may be appropriately advised whether they have optimal treatment. Nutritional and vitamin deficiencies are common in osteoporotic patients and can easily be addressed by spine practitioners. |
|               | **Learning Objectives:** Upon completion of this symposium, participants will gain strategies to: |
|               | - Motivate spine practitioners to diagnosis and begin medical management of patients with metabolic bone disease. |
|               | - Recognize the value to patients of fracture liaison services. |
|               | - Identify patients at fracture risk from osteoporosis. |
|               | - Advise patients regarding pharmacologic therapy to manage osteoporosis. |
|               | - Recommend nutritional supplementation and rehabilitation in patients with osteoporosis. |
|               | - Recognize surgical considerations for patients with osteoporosis. |
| 12:30 – 12:45 pm| **The Pathophysiology of Metabolic Bone Disease**  
Kyle J. Jeray |
| 12:45 – 1:00 pm| **Assessment of Osteoporosis**  
Justin S. Smith |
| 1:00 – 1:15 pm| **Medical Management**  
Paul A. Anderson |
| 1:15 – 1:30 pm| **Teriparatide: Is This an Answer in Geriatric Patients?**  
Christopher P. Ames |
1:30 – 1:45 pm
**Case Discussions: Surgical Considerations in Osteoporotic Patients**
Tyler R. Koski

1:45 – 2:00 pm
**Discussion and Question**

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### Lunch Symposium II

**12:30 – 2:00 pm**
**Pacifica Ballroom 10**

**Spinal Oncology Challenges**

**Moderators:** Ali A. Baaj, Srinivas K. Prasad  
**Speakers:** Dean Chou, Ziya L. Gokaslan, Ilya Laufer, Paul C. McCormick, Daniel M. Sciubba, Khoi Duc Than

**Course Description:** This course will explore contemporary treatment strategies for oncologic diseases of the spine. Competing management options for common problems will be explored and debated by leaders in the field. Emphasis will be placed on emerging techniques and technologies, examining contemporary applications of MIS and stereotactic radiosurgery to both intradural and extradural neoplasms.

**Learning Objectives:** Upon completion of this course, participants will be able to:

- Discuss open, minimally invasive and multi-modal approaches to metastatic epidural spinal cord compression.
- Review the evolving role of SRS in spinal oncology.
- Discuss advances in the management of intramedullary and intradural–extramedullary tumors.

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**12:30 – 1:10 pm**
**Debate: The Evolving Surgical Role in Metastatic Epidural Spinal Cord Compression**

**12:30 – 12:40 pm**
**Traditional Open Surgical Techniques**  
Ziya L. Gokaslan

**12:40 – 12:50 pm**
**Modern Day MIS Techniques**  
Dean Chou

**12:50 – 1:00 pm**
**Separation Surgery with SRS**  
Daniel M. Sciubba

**1:00 – 1:10 pm**
**Discussion and Questions**
The MEETING AGENDA

1:10 – 1:25 pm
The Role for SRS in Spinal Oncology
Ilya Laufer

1:25 – 1:40 pm
MIS Approaches to Intra Dural Extra Medullary Tumors
Khoi Duc Than

1:40 – 1:55 pm
Contemporary Approaches to Intra Medullary Spinal Cord Tumors
Paul C. McCormick

1:55 – 2:00 pm
Discussion and Questions

Lunch Symposium III
12:30 – 2:00 pm Pacifica Ballroom 11 $200

The Latest and Greatest in Spine Navigation

Moderators: Roger Hartl, Rod J. Oskouian
Speakers: Doniel Drazin, J. Patrick Johnson, Noojan Kazemi, David O. Okonkwo, Charles A. Sansur

Course Description: This course will cover the latest advances and the use of spine navigation in trauma, deformity, infection, and tumors as well as revision cases. The premise of the course is to maximize accuracy in using navigation and enhance patient outcomes in spine surgery. We will cover essential topics such as positioning, optimal frame placement, registration, calibration, frame-less versus frame-based systems available, and whether to scan the patient in the operating room or preoperatively. We will also discuss bail-out strategies for difficult cases and when your navigation system is not accurate.

Learning Objectives: Upon completion of this course, participants will be able to:
- Maximize spine hardware placement accuracy.
- Increase efficiency of spine navigation.
- Describe bail-out strategies.

12:30 – 12:45 pm
Navigation in Spinal Deformity
David O. Okonkwo

12:45 – 1:00 pm
Pitfalls of Navigation
Doniel Drazin
1:00 — 1:15 pm
**Navigate Everything?**
J. Patrick Johnson

1:15 — 1:30 pm
**Navigation for Spine Trauma**
Charles A. Sansur

1:30 — 1:45 pm
**Accuracy of Navigation**
Noojan Kazemi

1:45 — 2:00 pm
**Questions and Discussion**

2:00 — 6:00 pm  Banda Sea 1/2

**Spine Section Cadaver Lab — Non-CME Course**

**Course Directors:** Luis M. Tumialan, Rishi Kumar Wadhwa
**Faculty:** Josh Ammerman, Nevan Baldwin, Sig Berven, Bruce McCormack, Jonathan Sherman, Carl Spivak

**Course Description:** Participants will engage in hands-on learning of innovative new technologies in spine and peripheral nerve surgery. In this four-hour cadaver lab, participants will learn advanced techniques in minimally invasive, deformity spine surgery, and peripheral nerve repair. Rotations include direct lateral lumbar approaches, minimally invasive lumbar fusion, percutaneous screw fixation, endoscopic decompression, spinal deformity correction, and peripheral nerve grafting. One-on-one instruction will be performed with experienced faculty using the latest state-of-the-art instrumentation and devices. Surgeons with limited prior experience will learn practical techniques to introduce into their clinical practice. Those with advanced experience will have the opportunity to share surgical technique refinement with expert faculty, and to survey a variety of new technologies.

**Learning Objectives:** Upon completion of this course, participants will be able to:
- Describe indications and techniques for various new technologies in spine surgery.
- Describe indications and techniques for various new technologies in peripheral nerve surgery.
- Describe complication avoidance and management for various new technologies in spine and peripheral nerve surgery.
6:45 – 9:00 pm  Promenade Deck

Young Neurosurgeons’ Dinner

Speaker: Philip R. Weinstein

All residents, fellows, and young neurosurgeons are invited to enjoy a delicious dinner with Meritorious Member Award Recipient, Philip R. Weinstein. RSVP at the registration desk.

Educational Grant provided by DePuy Synthes
Saturday, March 19, 2016

6:30 am – 12:00 pm Registration North Desk

6:30 – 7:30 am Pacifica Ballroom 7 Foyer
Complimentary Continental Breakfast

Oral Presentations Learning Objectives: Upon completion of this session, participants will be able to:

- Analyze the findings of novel neurosurgical studies; critique the design and methodology of these studies.
- List important areas for further knowledge development and research.
- Identify the most important ongoing clinical trials.

7:00 – 8:00 am Pacifica Ballroom 8/9

Oral Platforms: Two-Minute Point Presentations I

Moderators: Faiz U. Ahmad, Yi Lu

7:00 – 7:02 am
209 The Impact of Surgical Management on Long-term Pain Symptoms in Patients with Cervical Spondylotic Myelopathy: Analysis from a Prospective Multicenter Dataset
Jefferson R. Wilson, Lindsay Tetreault, Ashwini Dayal Sharan, James S. Harrop, Alexander R. Vaccaro, Michael G. Fehlings

7:02 – 7:04 am
210 Does Age Affect Surgical Outcomes in Patients with Degenerative Cervical Myelopathy? Results from the Prospective, Multicenter AOSpine International Study on 479 Patients
Hiroaki Nakashima, Lindsay Tetreault, Narihito Nagoshi, Aria Nouri, Michael G. Fehlings
7:04 – 7:06 am  
211 Is Preoperative Duration of Symptoms a Significant Predictor of Functional Status and Quality of Life Outcomes in Patients Undergoing Surgery for the Treatment of Degenerative Cervical Myelopathy?  
Lindsay Tetreault, Branko Kopjar, Jefferson R. Wilson, Paul M. Arnold, Michael G. Fehlings

7:06 – 7:08 am  
212 A 30 meter Walking Test as a Measure of Cervical Spondylotic Myelopathy Severity: Test Characteristics and Results from Two Multicenter Cohort Studies  
Parker Bohm, Paul M. Arnold, Branko Kopjar, Michael G. Fehlings, Lindsay Tetreault, Alexander R. Vaccaro

7:08 – 7:10 am  
213 A Clinical Prediction Rule for Functional Outcomes in Patients Undergoing Surgery for Severe Degenerative Cervical Myelopathy: Analysis of an International AOSpine Prospective Multicentre Dataset of 254 Subjects  
Lindsay Tetreault, Branko Kopjar, Pierre Cote, Paul M. Arnold, Michael G. Fehlings

7:10 – 7:12 am  
214 Effect of Obesity on Cost and Effectiveness After Decompression With and Without Fusion for Degenerative Lumbar Disease  
Scott L. Parker, John Alexander Sielatycki, Silky Chotai, Ahilan Sivaganesan, David P. Stonko, Matthew J. McGirt, Clinton J. Devin

7:12 – 7:14 am  
215 Utility of Multi–level Lateral Interbody Fusion of the Thoracolumbar Coronal Curve Apex in Adult Deformity Surgery in Combination with Posterior Instrumentation and L5–S1 Interbody Fusion: A Case–matched Evaluation of 46 Patients  

7:14 – 7:16 am  
216 Percutaneous Instrumentation Without Fusion: Reoperation Rates for Implant Failure and Pseudarthrosis Following Mini–open Transpedicular Corpectomy  
Darryl Lau, Dean Chou
7:16 – 7:18 am
217 Non–fusion does not Prevent Adjacent Segment Disease: Dynesys Long Term Outcomes with Minimum Five-years Follow–up
Godefroy Hardy St–Pierre

7:18 – 7:20 am
218 Multivariate Analysis of Factors Affecting Functional Outcomes and Disposition After Atlantoaxial Fusion
Jian Guan, Michael Karsy, Andrew T. Dailey, Meic H. Schmidt, Darrel S. Brodke, Brandon Lawrence, Erica Fay Bisson

7:20 – 7:22 am
219 A Prospective Longitudinal Study in Degenerative Cervical Myelopathy Using Next–generation Multimodal Quantitative MRI with Tract–specific Metrics
Allan R. Martin, Izabela Aleksanderek, Julien Cohen–Adad, David W. Cadotte, Sukhvinder Kalsi–Ryan, Benjamin De Leener, Lindsay Tetreault, David J. Mikulis, Howard J. Ginsberg, Michael G. Fehlings

7:22 – 7:24 am
220 Impact of Resident Participation on Outcomes Following Single–level Anterior Cervical Diskectomy and Fusion: An Analysis of 3,265 Patients from the ACS–NSQIP Database
Robert B. Kim, Roxanna Garcia, Zachary Adam Smith, Nader S. Dahdaleh

7:24 – 7:26 am
221 Patient Satisfaction with Posterior Decompression Surgery for Cervical Ossification of the Posterior Longitudinal Ligament: Prognostic Radiographic Factors and Patient–reported Outcomes for the Effectiveness of Surgical Treatment
Junichi Ohya, Yasushi Oshima, Katsushi Takeshita, Fumiko Saiki, Yuki Taniguchi, Yoshitaka Matsubayashi, Hirotaka Chikuda

7:26 – 7:28 am
222 Do Racial Differences Affect Surgical Outcomes in Patients with Degenerative Cervical Myelopathy? Results from the Prospective, Multicenter AOspine International Study on 479 Patients
Narihito Nagoshi, Lindsay Tetreault, Hiroaki Nakashima, Aria Nouri, Michael G. Fehlings
7:28 — 7:30 am
223 The Impact of Diabetes on In–hospital Morbidity and Mortality Following Anterior Cervical Discectomy and Fusion: A Population–based Study
Rafael De la Garza–Ramos, Atman Desai, Brandon A. McCutcheon, Panagiotis Kerezoudis, Meghan Murphy, Ross Puffer, Patrick R. Maloney, Ziya L. Gokaslan, Mohamad Bydon

7:30 — 7:32 am
224 Cervical Range of Motion and Functional Outcome in Patients who Have Sustained Anterior Cervical Discectomy and Fusion Surgery (ACDF)
Savvas Spanos, Ioannis D. Stiasios, Aggeliki Fotiadou, Konstantinos Paterakis, Vassilios Georgios Dimopoulos, Kostas N. Fountas

7:32 — 7:34 am
225 Cost Effectiveness of Repeat Discectomy Versus Discectomy and Fusion for Recurrent Disc Herniation
Vijay Yanamadala, Hany Bedair, John H. Shin, Thomas D. Cha

7:34 — 7:36 am
226 Intraoperative Ultrasound to Guide the Resection of Centrally Herniated Thoracic Discs
Yuri A. Pompeu, Viren Sahai Vasudeva, Alfred P. See, Michael W. Groff, Yi Lu

7:36 — 7:38 am
227 Patient Perceptions About Quality of Care in Spinal Disorders
Cheerag D. Upadhya, Kate W.-C. Chang, Shawn Brown, Tara Beach, Shawn Hervey-Jumper, Aditya Pandey, Paul Park, Lynda J.-S. Yang

7:38 — 7:40 am
228 Dynamic Stabilization System Combined Fusion: Two-year Outcomes in Lumbar Spondylosis
Li–Yu Fay, Jau–Ching Wu, Wen–Cheng Huang, Henrich Cheng

7:40 — 7:42 am
229 PCA Use for Inpatient Posterior Lumbar Spine Fusion: Opioid–related Complications and Costs
Matthew J. McGirt, Clinton J. Devin, Edmund Lau, Scott Lovald, Kevin L. Ong

7:42 — 7:44 am
230 Does Intraoperative Pedicle Screw Stimulation Prevent the Development of a New Neurodeficit? Experience with the use of IOM in 2012 Patients Undergoing Posterior Lumbar Fusion Surgery
Gurpreet Surinder Gandhoke, Jaspreet Kaur, Parthasarathy Thirumala, Ezequiel Goldschmidt, Jeffrey Baizer, Donald Crammond, James Kang, David O. Okonkwo, Adam S. Kanter
231 Discharge to Rehabilitation Reduces Readmission Rates in Elective Spinal Surgery: Predictors of Discharge to Rehabilitation or Skilled Care Facilities
Nicholas B. Abt, Brandon A. McCutcheon, Panagiotis Kerezoudis, Meghan Murphy, Ross Puffer, Patrick R. Maloney, Mohamad Bydon

232 Novel Spinal CSF Dynamics Visualization Using MRI Time–SLIP Method
Tatsushi Inoue, Hirokazu Murayama, Keisuke Ito, Natsusuki Hattori, Yuichi Hirose

233 Lumbar Spine Sagittal Kinetics: A Flexion-extension X-rays Based Study of Hospital Population
Javed Khader Eliyas, Kenneth Barshop, Dominic Catalano, Martha Pemberton Heath, Ben Z. Rottberg

234 Advances in Spinal Surgery: A Biomaterials Approach
Gianfranco Ligarotti, Laura Ganau, Marco Paris, Francesca Graziano, Vishal Prasad, Mario Ganau

235 Hybrid Vascular Technique for Primary Repair of Iatrogenic Vertebral Artery Injury

236 Combined Preoperative Traction with Instrumented Posterior Occipitocervical Fusion for Severe Ventral Brainstem Compression Secondary to Displaced Os Odontoideum: A Technical Report of Two Cases
Muhammad M. Abd–El–Barr, Brian D. Snyder, John B. Emans, Mark R. Proctor, Daniel J. Hedequist

237 Fluctuations in Spinal Cord Perfusion During Adult Spinal Deformity Correction Identify Neurological Changes: Proof of Concept
Jay D. Turner, Robert Eastlack, Zaman Mirzadeh, Stacie Nguyen, Jeff B. Pawelek, Gregory M. Mundis, Jr.

238 Clinical and Radiographic Outcomes After Multimodal Surgical Stabilization of Thoracolumbar Fractures: A Retrospective Analysis
Salman Abbasifard, Cameron Miles Johnstone, Kamran Sattarow, Christina M. Walter, Mauricio J. Avila, Apar Patel, Ali A. Baaj
MEETING AGENDA

7:00 – 8:00 am  Pacifica Ballroom 10

Oral Platforms: Two-Minute Point Presentations II

Moderators: Kurt M. Eichholz, Gregory R. Trost

7:00 – 7:02 am
239 Bundled Infection Prevention Methods Reduce Infection Rate and Cost In Spine Surgery
Joseph Featherall, Jacob A. Miller, Elizabeth Emily Bennett, Daniel Lubelski, Tagreed Khalaf, Ajit A. Krishnaney

7:02 – 7:04 am
240 Comparing the Effectiveness of Sagittal Balance, Foraminal Stenosis, and Preoperative Cord Rotation in Predicting Postoperative C5 Palsy
Arunit Jessey S. Chugh, Douglas S. Weinberg, Fernando Alonso, Jason D. Eubanks

7:04 – 7:06 am
241 Clinical Outcomes Following Surgical Management of Coexistent Parkinson’s Disease and Cervical Spondylotic Myelopathy
Roy Xiao, Jacob A. Miller, Navin C. Subharwal, Daniel Lubelski, Thomas E. Mroz, Edward C. Benzel, Ajit A. Krishnaney, Andre Machado

7:06 – 7:08 am
242 Quality of Life and Functional Outcomes After Surgical Decompression in Patients with Cervical Ossification of the Posterior Longitudinal Ligament: Results from the Prospective, Multicenter AOSpine International Study on 479 Patients
Hiroaki Nakashima, Lindsay Tetreault, Narihito Nagoshi, Aria Nouri, Michael G. Fehlings

7:08 – 7:10 am
243 Cost–utility Analysis of Anterior Cervical Discectomy and Fusion for Degenerative Spine Disease in Elderly Population
Scott L. Parker, Silky Chotai, John Alexander Sielatycki, Ahilan Sivaganesan, Harrison Kay, David P. Stonko, Joseph Wick, Matthew J. McGirt, Clinton J. Devin

7:10 – 7:12 am
244 Postoperative CSF Leak Rates with Subfascial Epidural Drain Placement After Intentional Durotomy in Spine Surgery
Tianyi Niu, Haydn Hoffman, Morteza Modaber, Dean Chou, Daniel C. Lu
7:12 – 7:14 am
245 The Impact of Superior Segment Facet Joint Violation During Instrumented Lumbar Fusion
Jay M. Levin, Vincent J. Alentado, Andrew Torre Healy, Michael P. Steinmetz, Edward C. Benzel, Thomas E. Mroz

7:14 – 7:16 am
246 Incidence of Position Related Neuropraxia in 4489 Consecutive Patients Undergoing Spine Surgery. What is the Role of SSEP Monitoring?
Gurpreet Surinder Gandhoke, Jaspreet Kaur, Parthasarthy Thirumala, Zachary J. Tempel, Jeffrey Balzer, DonaldCRMond, William Donaldson, III, David O. Okonkwo, Adam S. Kanter

7:16 – 7:18 am
247 Clinical Outcomes Associated with the Surgical Management of Severe Cervical Spondylotic Myelopathy
Parker Bohm, Paul M. Arnold, Joshua H. Arnold, Michael G. Fehlings, Branko Kopjar

7:18 – 7:20 am
248 Proximal Junctional Angle Predicts Need for Revision but not Deterioration in Sagittal Radiographic Parameters After Adult Spinal Deformity Surgery

7:20 – 7:22 am
249 Incidence, Causes, and Risk Factors Associated with Short–term Mortality and Post–operative Complications After Spinal Arthrodesis in the Pediatric Population Using the NSQIP Pediatric Database
Nancy A. Abu–Bonsrah, C. Rory Goodwin, Gezzer Ortega, Fizan Abdullah, Edward E. Cornwell, III, Paul Sponseller, Michael C. Ain, Daniel M. Sciubba

7:22 – 7:24 am
250 Cerebrospinal Fluid Leak During Anterior Cervical Discectomy and Fusion Does Not Affect the Fusion Rate
7:24 – 7:26 am
251 Causes and Risk Factors for 30 Day Readmission Following Single Level Transforaminal Lumbar Interbody Fusion (TLIF) from 4,992 Cases
Roxanna Garcia, Ryan Khanna, Nader S. Dahdaleh, Sandi Lam, George R. Cybulski, Zachary Adam Smith

7:26 – 7:28 am
252 Comparison of Clinical and Radiographic Outcomes in Patients Receiving Single–level Transforaminal Lumbar Interbody Fusion (TLIF) with Removal of Unilateral or Bilateral Facet Joints
Erik Y. Tye, Vincent J. Alentado, Thomas E. Mroz, Edward C. Benzel, Michael P. Steinmetz

7:28 – 7:30 am
253 A New Technique for Sublaminar Decompression in the Treatment of Degenerative Disorders of the Lumbar Spine
Khaled Kebaish, Benjamin D. Elder, Sheng–fu Larry Lo, Timothy F. Witham

7:30 – 7:32 am
254 Epidural Lipomatosis: An Indolent Cause of Spinal Stenosis—A Multicentric Review
Marco Paris, Gianfranco Ligarotti, Laura Ganau, Nikolaos Syrmos, Salvatore Chibbaro, Mario Ganau

7:32 – 7:34 am
255 The Pia Mater Significantly Contributes to Spinal Cord Intraparenchymal Pressure in a Simulated Model of Edema
Daniel Harwell, Justin Louis Gibson, Richard David Fessler, Jeffrey R. Holtz, David B. Pettigrew, Charles Kuntz, IV

7:34 – 7:36 am
256 Anterior Cervical Discectomy and Fusion: Comprehensive Comparison of Fusion and Complication Rates between Recombinant Human Bone Morphogenetic Protein–2 and Beta–Tricalcium Phosphate
Christopher M. Holland, Brendan P.Lovasik, Brian M. Howard, Griffin Richard Baum, Daniel Refai, Gerald E. Rodts, Jr.

7:36 – 7:38 am
257 Reliable Intraoperative Repair Nuances of CSF Leak in Anterior Cervical Spine Surgery
Terence Verla, Bartley Mitchell, Gaddum Reddy, Lona Winnegan, Ibrahim Omeis
7:38 – 7:40 am
258 Cervical Radiographic Parameters in One and Two Level Anterior Cervical Discectomy and Fusion
Christopher Charles Gillis, Megan C. Kaszuba, Vincent C. Traynelis

7:40 – 7:42 am
259 Surgical Technique of Cannulated Cervical Pedicle Screw Using O-Arm
Nobuyuki Shimokawa

7:42 – 7:44 am
260 Cortical Bone Trajectory and Traditional Pedicle Screw Dual Trajectory: Radiographic Volumetric Analysis
Jeffrey Paul Mullin, Breanna C. Perlmutter, Michael P. Steinmetz, Edward C. Benzel

7:44 – 7:46 am
261 Placement of Lordotic Cages Maintains Segmental and Lumbar Lordosis in Posterior Lumbar Interbody Fusions
Mark Frenkel, Adam Robert Mathes, David J. Hart, Charles L. Branch, Jr.

7:46 – 7:48 am
262 Impact of Preoperative Depression on Two-year Clinical Outcomes Following Adult Spinal Deformity Surgery

7:48 – 7:50 am
263 Successful Anterior Fusion Following Posterior Cervical Fusion for Revision of ACDF Pseudarthrosis

7:50 – 7:52 am
264 The Effect of Posterior Tethers on the Biomechanics of Proximal Junctional Kyphosis: A Finite Element Analysis
Shay Bess, Justin S. Smith, Virginie Lafage, Christopher I. Shaffrey, Frank Schwab, Regis W. Haid, Jr., Jeffrey Harris, Alexander William Turner

7:52 – 7:54 am
265 A Systematic Review of Primary Spinal Amyloidoma: Lessons Learned From Surgically Managed Lesions
Kumar Vasudevan, Arsalaan Salehani, Gustavo Pradilla, Faiz U. Ahmad
7:54 — 7:56 am
266 Operative Technique: Anterior Spinal Cord Vascular Pathologies Surgically Treated from a Posterior Approach: Spinal Cord Rotation Illustrated with Three Cases
Nirav J. Patel, Mohammad Ali Aziz–Sultan, Alfred Pokmeng See

7:56 — 7:58 am
267 Interspinous Process Fixation versus Pedicle Screw Fixation in Circumferential Arthrodesis: One-year Outcomes from a Prospective Randomized Multi–center Trial
Kee Kim, Ryan Peter Denhaese, Clint Hill, Brandon Strenge, Alexander Demoura, Andy Kranenburg, M. David Dennis, Andy Cappuccino, Gowriharan Thaiyananthan, Paul M. Arnold, Peter G. Passias, Kim Martin, Brieta Bejin, Sarah Martineck, Camille Moore, Chris Ferry

7:58 — 8:00 am
268 The Vertebral Artery Anatomy in Relation to Cervical Pedicles in Saudi Population: A Morphometric Analysis for Surgical Considerations
Jehad Ahmed, Amro Alhabib

7:00 — 8:00 am Pacifica Ballroom 11
Oral Platforms: Two-Minute Point Presentations III

Moderators: Asdrubal Falavigna, John E. Ziewacz

7:00 — 7:02 am
269 Expandable Versus Non–Expandable Cages in Transforaminal Lumbar Interbody Fusion: Comparison of Segmental and Lumbar Lordotic Angles
Timothy J. Yee, Jacob R. Joseph, Samuel W. Terman, Elyne Kahn, Paul Park

7:02 — 7:04 am
270 A Comparative Cohort Study of Cervical 1–2 instrumentation: Fluoroscopy versus CT–image Guidance Navigation
Lindsey Ross, Doniel Drazin, Joseph Chia Yu Hsieh, Carlito Lagman, Eli M. Baron, Robert S. Pashman, Terrence T. Kim, J. Patrick Johnson

7:04 — 7:06 am
271 A Novel Morphometric Measurement, the Mandibular Ramus–C2 Angle, Accurately Predicts Reduction of Oropharyngeal Airway Dimensions and the Development of Postoperative Dysphagia Following Occipitocervical Fusion
Charles Edward Mackel, Shane M. Burke, Simcha Weller
7:06 – 7:08 am
272 Upright MRI Cervical Spine: Neck Pain and Radiculopathy
Ha Nguyen, Saman Shabani, Ninh Doan, Brian D. Stemper, Jamie Baisden, Christopher E. Wolfla, Glenn Paskoff, Barry S. Shender

7:08 – 7:10 am
273 Surgical Rationale and Techniques for Large Ossification of the Posterior Longitudinal Ligament of the Cervical Spine with Silent Cord Compression
Junichi Mizuno

7:10 – 7:12 am
274 Preservation of the Posterior Longitudinal Ligament in Anterior Cervical Discectomy and Fusion for Myeloradiculopathy: Short–term Clinical Outcomes and Complications

7:12 – 7:14 am
275 Radiographic and Patient Reported Outcomes After Long Posterior Cervical Fusions
Michael T. Merrick, John R. Dimar, Kelly R. Bratcher, Katlyn E. McGraw, Leah Yacat Carreon

7:14 – 7:16 am
276 Quality of Life Outcomes Following Surgical Management of Coexistent Parkinson’s Disease and Cervical Spondylotic Myelopathy
Roy Xiao, Jacob A. Miller, Navin C. Subharwal, Daniel Lubelski, Thomas E. Mroz, Edward C. Benzel, Ajit A. Krishnaney, Andre Machado

7:16 – 7:18 am
277 Significance of T2 Hyperintensity on Magnetic Resonance Imaging After Cervical Cord Injury and Return to Play in Professional Athletes
Zachary Tempel, Jeff Bost, John Norwig, Joseph C. Maroon

7:18 – 7:20 am
278 Stable Spondylolisthesis: Should Management Change Based on Presence of Facet Cysts?
Arunit Jessey S. Chugh, Fernando Enrique Alonso, Jason D. Eubanks

7:20 – 7:22 am
279 Orphenadrine Citrate and Paracetamol as a New Option for Chronic Low Back Syndrome
Nikolaos Syrmos, Gianfranco Ligarotti, Laura Ganau, Marco Paris, Vishal Prasad, Mario Ganau
280 Neurological Outcomes Following Iatrogenic Vascular Injury During Posterior Atlanto–axial Instrumented Fusion
Griffin Richard Baum, Oluwaseun Akinduro, Brian M. Howard, Gustavo Pradilla, Jonathan Andrew Grossberg, Gerald E. Rodts, Jr., Faiz U. Ahmad

281 Role of Spinal Diffusion Tensor Imaging in Predicting Postoperative Outcome in Cervical Degenerative Pathologies
Rima Sestokas Rindler, Falgun Chokshi, Sheila Eshraghi, Mahmud Mossa–Basha, James G. Malcolm, Jason K. Chu, Faiz U. Ahmad

282 Successful Treatment of Severe Occipitocervical Pain from C1–C2 Osteoarthritis Using a Modified Harms Technique
Ara J. Deukmedjian, Augusto J. Cianciabella, Bharat C. Patel, Arias Deukmedjian

283 Cervical Sagittal Balance Parameters After One Level ACDF Surgery in Patients With Cervical Myelopathy and in Patients with Radiculopathy: Correlations with Clinical and Functional Outcome
Ioannis D. Siasios, Evan Winograd, Vassilios Georgios Dimopoulos, John Pollina, Jr.

284 A Biomechanical Evaluation of a Versatile and Novel Anterior Cervical Fusion Device Possessing Modular and Integrated Fixation Capabilities
Ripul R. Panchal, John E. Wanebo, Anup Gandhi, Chris Ferry, Sam Farmer, Kaushik Das

285 Esophageal Perforation After Anterior Cervical Spine Surgery: A Systematic Review of the Literature
Sameer H. Halani, Griffin Richard Baum, Jonathan Riley, Gustavo Pradilla, Daniel Refai, Gerald E. Rodts, Jr., Faiz U. Ahmad

286 Removal of Disc Fragments from the Lumbar Spinal Canal Without Normal Anatomy Disruption
David A. Ditsworth, Luis Lombardi, Irina Bogacheva
7:36 – 7:38 am  
287 Lumbar Spinal Fixation with Cortical Bone Trajectory Pedicle Screws in 79 Patients withDegenerative Disease: Perioperative Outcomes and Complications  
Laura A. Snyder, Eduardo Martinez del Campo, Matthew Thomas Neal, Hasan A. Zaidi, Al–Wala Awad, Robert Wagner Bina, Francisco A. Ponce, Taro Kaibara, Steve W. Chang

7:38 – 7:40 am  
288 Parasitic Spinal Infections: Differential Diagnosis and Management Strategies  
Laura Ganau, Marco Paris, Nikolaos Symros, Gianfranco Ligarotti, Igor Faquini, Mario Ganau

7:40 – 7:42 am  
289 Reconstruction of Open Wounds as a Complication of Spinal Surgery with Flaps: A Systematic Review  
Lee Onn Chieng, Zachary Hubbard, Christopher J. Salgado, Allan D. Levi, Harvey Chim

7:42 – 7:44 am  
290 Semitendinosus Graft for Interspinous Ligament Reinforcement of the Proximal Adjacent Segment in Multilevel Instrumentation to the Upper Thoracic Spine: Report of a Novel Technique for Proximal Junctional Kyphosis Prevention in Adult Spinal Deformity  
Martin H. Pham, Alexander Tuchman, Lance Smith, Vivek Mehta, Frank L. Acosta, Jr.

7:44 – 7:46 am  
291 Clinical and Radiological Outcome in Cases of Spinal Instrumentation: Experience from a Developing Institution from INDIA  
Ramesh Teegala, Sridhara Narayana

7:46 – 7:48 am  
292 The Michigan Spine Surgery Improvement Collaborative (MSSIC): A Statewide Collaborative Quality Initiative  
Victor Chang, Jason M. Schwalb, David Nerenz, Stephen Bartol, Muwaffak Abdulhak

7:48 – 7:50 am  
293 Care Pathways: A Pragmatic Approach to Enhancing Spine Care Cost Savings and Improving Patient Outcomes  
Christina M. Walter, Cameron Miles Johnstone, Mauricio J. Avila, Carmine Zoccali, Jesse Skoch, Sheri K. Palejwala, Whitney S. James, Ali A. Baaj
7:50 – 7:52 am  
**294** Missed Cervical Spine Fractures, Once Screened by Japanese Neurosurgeons  
Masahiko Akiyama, Shigehiro Nakahara, Hiroki Ohashi, Hiroyasu Nagashima, Satoshi Tani

7:52 – 7:54 am  
**295** A Working Protocol for the Management of Spinal Coccidioidomycosis  
Nikolay L. Martirosyan, Jesse Skoch, Orel Zaninovich, Carmine Zoccali, John Galgiani, Ali A. Baaj

7:54 – 7:56 am  
**296** Iatrogenic Spondylolisthesis After Lumbar Laminectomy  
Seba Ramhmdani, Risheng Xu, Thomas Kosztowski, Rafael De la Garza–Ramos, Mohamad Bydon, Daniel M. Scuibba, Jean–Paul Wolinsky, Timothy F. Witham, Ziya L. Gokaslan, Ali Bydon

7:56 – 7:58 am  
**297** Biomechanical Assessment of the Novel Expandable Lumbar Interbody Fusion System  
Leonard I. Voronov, Michael Conti Mica, Gerard Carandang, Robert Havey, Avinash Patwardhan

7:58 – 8:00 am  
**298** Balloon Kyphoplasty for Osteoporotic Multiple Vertebral Compression Fractures  
Yoshitaka Hirano, Yasunobu Itoh, Shinichi Numazawa, Sadayoshi Watanabe, Kazuo Watanabe

7:00 – 8:00 am  Pacifica Ballroom 12  
**Oral Platforms: Two-Minute Point Presentations IV**  
**Moderators:** Yoav Ritter, Steven Vanni

7:00 – 7:02 am  
**299** Predictors of Extended Hospital Stay after Cervical Disc replacement or Anterior Cervical Discectomy and Fusion: Results from 1,004 Patients in an FDA Trial  
S. Tim Yoon, Todd D. Vogel, Aaron J. Greenberg, Praveen V. Mummaneni

7:02 – 7:04 am  
**300** Intraoperative Neuromonitoring (IONM) for Adult Patients Undergoing Posterior Spinal Fusion Surgery (PSFS)  
Alp Ozpinar, Gustavo Adolfo Mendez, Robert Hart, Iker Yaylali
7:04 – 7:06 am
301 Rare Neurosurgical Complications of Epidural Injections: A 14–year Single–institution Experience
Gabriel Alexander Smith, Jonathan Pace, Madeleine Strohl, Anand Kaul, Salim Hayek, Jonathan P. Miller

7:06 – 7:08 am
302 Explorative Meta–analysis on Dose–related Efficacy and Morbidity of Bone Morphogenetic Protein in Spinal Arthrodesis Surgery
Christoph Paul Hofstetter, Anna–Sophie Hofer, Allan D. Levi

7:08 – 7:10 am
303 Validation of the Calgary Spine Severity Score
Godefroy Hardy St–Pierre, R. John Hurlbert

7:10 – 7:12 am
304 Instrumentation Failure in 1110 PLIF Cases
Kosuke Kuribayashi

7:12 – 7:14 am
305 Verification of Nerve Decompression Using Mechanomyography (MMG)
Wael Ghacham, Nolan Wessell, Jad Khalil, Joseph Zavatsky, Stephen Bartol

7:14 – 7:16 am
306 The Minimal Clinically Important Difference of the Modified Japanese Orthopaedic Association Scale in Patients with Degenerative Cervical Myelopathy Undergoing Surgery
Lindsay Tetreault, Aria Nouri, Branko Kopjar, Pierre Cote, Paul M. Arnold, Michael G. Fehlings

7:16 – 7:18 am
307 Proximal Instrumentation Failure Rates of C2 Pedicle Screws Versus C3 Lateral Mass Screws in Posterior Cervical Fusion Constructs
Thomas Kosztowski, Yuanxuan Xia, Rafael De la Garza–Ramos, Risheng Xu, C. Rory Goodwin, Benjamin D. Elder, Daniel M. Sciubba, Jean–Paul Wolinsky, Timothy F. Witham, Ziya L. Gokaslan, Ali Bydon

7:18 – 7:20 am
308 Dynamic Foraminal Dimensions During Neck Extension and Rotation in Fusion and Artificial Disc Replacement
Azam Basheer, Yener Yeni, Timothy Baumer, Daniel Oravec, Michael Bey, Stephen Bartol, Victor Chang
7:20 – 7:22 am
309 Dynamic Cervicomedullary Spinal Cord Compression and Alterations in Cerebrospinal Fluid Dynamics in Children with Achondroplasia: Review of an 11-year Surgical Case Series
Debraj Mukherjee, Barry D. Pressman, Deborah Krakow, David L. Rimoin, Moise Danielpour

7:22 – 7:24 am
310 Central Sensitization Inventory as a Predictor of Worse Quality of Life Measures Following Cervical and Lumbar Spinal Fusion
Elizabeth Emily Bennett, Kevin M. Walsh, Ajit A. Krishnaney, Nicholas Thompson

7:24 – 7:26 am
311 Transforminal Lumbar Interbody Fusion Versus Extreme Lateral Interbody Fusion for Treatment of Single Level L4–5 Spondylolisthesis: Comparison of Patient Reported Quality Outcomes
Jeremy G. Stone, Georgios A. Zenonos, Zachary J. Tempel, David O. Okonkwo, Adam S. Kanter

7:26 – 7:28 am
Ken Catchpole, Robert S. Pashman, J. Patrick Johnson, Terrence T. Kim, Doniel Drazin

7:28 – 7:30 am
John A. Thomas

7:30 – 7:32 am
314 Correlating Single–photon Emission Computed Tomography (SPECT) CT Imaging and Intraoperative Findings for Upper Cervical Facet Arthropathy: A Pilot Study
Vijay Ravindra, Marcus D. Mazur, Erica Fay Bisson, Lubdha Shah, Craig Barton, Andrew T. Dailey

7:32 – 7:34 am
315 Can a Minimal Clinically Important Difference (MCID) be Achieved in Elderly Patients With Adult Spinal Deformity who Undergo Minimally Invasive Spinal Surgery?
Paul Park, David O. Okonkwo, Stacie Nguyen, Gregory M. Mundis, Jr, Khoi Duc Tran, Vedat Deviren, Frank La Marca, Kai–Ming G. Fu, Michael Y. Wang, Juan S. Uribe, Neel Anand, Richard G. Fessler, Pierce D. Nunley, Dean Chou, Adam S. Kanter, Christopher I. Shaffrey, Behrooz A. Akbarnia, Peter G. Passias, Robert Eastlack, Praveen V. Mummaneni
7:34 – 7:36 am
316 Ectopic rhBMP–2 Bone has Time Dependent Histologic and Radiographic Features
Kenneth M. Crandall, Michael Koltz, D. Kojo Hamilton, David M. Ibrahimi, Charles A. Sansur

7:36 – 7:38 am
318 Sagittal Balance Considerations in Planning Multilevel Cervical Intervention: Arthroplasty vs. Fusion
Avinash Patwardhan, Saeed Khayatzadeh, Leonard I. Voronov, Jeremy Goodsitt, Robert Havey, Zachary A. Smith, Anand V. Germanwala, Gerard Carandang, Carl Lauryssen

7:38 – 7:40 am
319 Development of a Preoperative Adult Spinal Deformity Frailty Index that Correlates to Common Quality and Value Metrics: Length of Stay, Major Complications, and Patient Reported Outcomes

7:40 – 7:42 am
320 Comparison of Radiographic Outcomes at L5/S1: ALIF vs TLIF
Yusef Imani Mosley, Juan S. Uribe, Chun–Po Yen, Joshua Marshall Beckman, Andrew C. Vivas, Stephen Lewis Reintjes

7:42 – 7:44 am
321 Axial Rotation in Lumbar Disc Herniation Patients Treated with Novel Dynamic Stabilization Device—A Pilot Study
Alejandro A. Espinoza Orias, Kresten Rickers, Sayuri Kitahata, S. Ringgaard, Finn Christensen, Gunnar B.J. Andersson, Cody Bunger, J. Peterson, Nozomu Inoue, Bruce Robie

7:44 – 7:46 am
322 Maintenance of Improvement in Sacroiliac Joint Pain for Two Years After Fusion: Results from a Single Center Using a Novel “Distraction Interference Arthrodesis Neurovascular Anticipating” Device
Kelsey R. Duncan, Barbara B. Manchec, Cesario V. Borlongan, Deborah L. Scott, Frances Bernardo, William Monahan, Thomas B. Freeman
7:46 – 7:48 am
323 Temporary Axial Rotation Stabilization for Lumbar Disc Herniation Surgery with the ARO® Spinal System: A Prospective Analysis of Safety and Clinical Efficacy
Kresten Rickers, S. Kitahata, Alejandro A. Espinoza Orias, S. Ringgaard, Finn Christensen, Gunnar B.J. Andersson, Cody Bunger, J. Peterson, Haishing Li, Nozomu Inoue, Bruce Robie

7:48 – 7:50 am
324 Isolated Spinal Transverse Process Fractures: Do They Have Any Clinical Significance?
Ahmed J. Awad, Jason H. Boulter, Jason M. Frerich, Brendan P. Lovasik, Reham R. Haroun, Jason W. Allen, Gustavo Pradilla, Faiz U. Ahmad

7:50 – 7:52 am
325 Floating Thoracic Spine After a Double, Non–contiguous Three Column Spinal Fracture
Griffin Richard Baum, Arsalaan Salehani, Brian M. Howard, Christopher Michael Holland, Louis Nkrumah, Jonathan Andrew Grossberg, Gustavo Pradilla, Gerald E. Rodts, Jr., Faiz U. Ahmad

7:52 – 7:54 am
326 Intraspinal Psammomatous Melanotic Schwannoma not Associated with Carney Complex: Case Report
Saman Shabani

7:54 – 7:56 am
327 Sacral Tumors: Key Goals and Surgical Strategies
Clay Madison Elswick, Marcus Lamar Stephens, II, Noojan Kazemi

7:56 – 7:58 am
328 Stand–alone Lumbar Cage Fusion Using Threaded Titanium Cages Without Pedicle Screw Fixation: Over 20 years Follow–up Results
Yoshichika Kubo

7:58 – 8:00 am
Questions and Discussion
MEETING AGENDA

Top International Reports

8:00 – 9:00 am  Timor Sea 1

Moderators: Shekar Kurpad, R.C. Mishra, Vedantam Rajshekhar, B.S. Sharma

8:00 am
Introductory Remarks

8:01 - 8:10 am
Overview of Spine Surgery in India
P.S. Ramani

8:11 - 8:15 am
New Concept in Anterior Cranio Vertebral Fixation
Dilip Kiyawat

8:16 - 8:20 am
Cranio-vertebral Junction
Sukhdeep Jhawar

8:21 - 8:25 am
New Strategies in Simplifying C1 -C2 Fixation
Sushil Patkar

8:26 - 8:30 am
A Novel Technique of Instrumentation in Complex CVJ Anomalies
Arun Srivastava

8:31 - 8:35 am
Clinicoradiological Outcome in 1000 Patients of Spondylolisthesis Undergoing Transforaminal Lumbar Interbody Fusion
Sudhir Dubey

8:36 - 8:40 am
Surgery for Intramedullary Spinal Cord Tumors: Experience at an Indian Armed Forces Tertiary Care Center
Col. Maneet Gill

8:41 - 8:45 am
Spinal Simulation Training in Indian Residency Training
Ashish Suri

8:46 - 8:50 am
CV Junction and Skull Base Surgeries with Minimal Resources
Deepak Jha
8:00 — 9:00 am
Scientific Session VIII

Pacifica Ballroom 7

Spinal Motion Preservation: Cost Effective or Clamor and Commotion

Moderators: Cheerag D. Upadhaya, Robert G. Whitmore
Speakers: Edward C. Benzel, Domagoj Coric, Kris Radcliff, Vincent C. Traynelis, Jau–Ching Wu

Learning Objectives: Upon completion of this session, participants will be able to:

- Discuss the pros and cons of cervical disc arthroplasty for spondylotic myelopathy.
- Assess the current treatment solutions for cervical disc arthroplasty.
- Recognize potential complications and avoidance pearls when performing cervical arthroplasty.
- Review the cost effectiveness of cervical arthroplasty.

8:00 — 8:22 am
Debate: Cervical Disc Arthroplasty for Spondylotic Myelopathy

8:00 – 8:08 am
Pro: Motion LIMITS Commotion
Regis W. Haid

8:08 – 8:16 pm
Con: Motion CAUSES Commotion
Edward C. Benzel

8:16 – 8:22 am
Panel Discussion

8:22 – 8:30 am
Latest Update on Cervical Arthroplasty Options and Challenges
Domagoj Coric

8:30 – 8:38 am
Avoiding Subsidence and Heterotopic Ossification Arthroplasty
Jau–Ching Wu
8:38 — 8:46 am
Adjacent Level Disease: What are the Odds?
Vincent C. Traynelis

8:46 — 8:54 am
Cost-Effectiveness of Cervical Arthroplasty
Kris Radcliff

8:54 — 9:00 am
Panel Discussion

9:00 — 9:20 am
Pacifica Ballroom 7 Foyer
Beverage Break

Cahill Controversies

9:20 – 11:00 am
Pacifica Ballroom 7

Moderators: Adam S. Kanter, David O. Okonkwo

9:20 — 9:40 am
High-grade Spondylolisthesis: Realign the Spine or In-situ Fusion?

9:20 — 9:28 am
Fuse In-situ: Simpler and Safer
Eric Woodard

9:28 — 9:36 am
Realign the Spine: Osteotomize and Restore Balance
Lawrence Lenke

9:36 — 9:40 am
Questions and Discussion

9:40 — 10:00 am
Interbody Cages as an Adjunct to Lumbar Fusion: Wasteful or Worthwhile?

9:40 — 9:48 am
Cages Add Load Sharing and Success
Domagoj Coric

9:48 — 9:56 am
Cages Add Cost, Time, and Risk
Jens Chapman

9:56 — 10:00 am
Questions and Discussion
10:00 – 10:20 am
Cervical Disc Herniation in the Athlete: Motion Preservation or Just Fuse It?

10:00 – 10:08 am
Maintain the Motion
R. John Hurlbert

10:08 – 10:16 am
Just Fuse It
Michael W. Groff

10:16 – 10:20 am
Questions and Discussion

10:20 – 10:40 am
Optimizing Sagittal Realignment: Posterior Contraction or Anterior Distraction?

10:20 – 10:28 am
Attack from the Back: Osteotomies and Contract
Gerald E. Rodts

10:28 – 10:36 am
Lateral Distraction: Anterior Lengthening Is the Modern Osteotomy
Richard Fessler

10:36 – 10:40 am
Questions and Discussion

10:40 – 11:00 am
Adjacent Level Cervical Disc Disease: Treat the Symptoms or Pathology?

10:40 – 10:48 am
Fuse Symptomatic Level Only: Treat the Patient, not the Imaging
Robert Heary

10:48 – 10:56 am
Fuse Them Both: Mitigate Future Surgery
Rick Sasso

10:56 – 11:00 am
Questions and Discussion

Educational Grant Provided by DePuy Synthes
Scientific Session IX

11:00 am — 12:00 pm  Pacifica Ballroom 7

Imaging, Trauma, and Trials

Moderators: Paul M. Arnold, Khoi Duc Than
Speakers: Michael G. Fehlings, Robert Hart, Vedantam Rajshekhar, Steven S. Yocom, Joseph M. Zavatsky

Learning Objectives: Upon completion of this session, participants will be able to:

- Discuss the pros and cons for the use of MRI in the intact trauma patient with NP.
- Review the most recent data from national spinal cord injury trials.
- Assess when it is safe to return to play after spine trauma.

11:00 — 11:25 am
Debate: Need for MRI in the Intact Trauma Patient with Neck Pain

11:00 — 11:10 am
Pro MRI: Get It and Clear Them!
Steven S. Yocom

11:10 — 11:20 am
Nay MRI: Waste of Money!
Vedantam Rajshekhar

11:20 — 11:25 am
Panel Discussion

11:25 — 11:35 am
The Changing Face of SCI Trials
Michael G. Fehlings

11:35 — 11:45 am
Anterior Column Support for Vertebral Body Fractures: When Is It Really Needed?
Robert Hart

11:45 — 11:55 am
Return to Play After Spine Trauma: When Is It Safe to Play, and When It Isn’t!
Joseph M. Zavatsky

11:55 am — 12:00 pm
Panel Discussion

12:00 pm
Meeting Adjourns
Pacifica Ballroom – exhibit hall detail

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Pacifica Ballroom

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Accreditation

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of Congress of Neurological Surgeons and the Section on Disorders of the Spine and Peripheral Nerves. The Congress of Neurological Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

AMA Credit Designation Statement

The CNS designates this live activity for a maximum of 22.25 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

CME Credit

A maximum of 17.0 AMA PRA Category 1 Credits™ may be earned for Scientific Sessions only.

Mid-Level Practitioners

Attendees will receive a certificate of attendance for the general Scientific Program and for any optional events attended. Please contact your individual membership association and certification board to determine the requirements for accepting credits.

Additional CME Credits can be earned by attending the following:

Special Courses

Attendees will receive a maximum of 3.75 AMA PRA Category 1 Credits™ for each eligible half-day Special Course. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
Luncheon Symposia

Attendees will receive a maximum of 1.5 AMA PRA Category 1 Credits™ for each eligible Luncheon Symposium. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Claiming Credit

CME and attendance credits can be claimed through the online credit system at www.cns.org. Log in using your last name and the email address with which you registered. You will need to enter the number of hours you are claiming for each session you attended. Physicians should only claim credit for the learning activities at the DSPN Spine Summit 2016 in which they actively participated. The tracking system lets you create and email a certificate immediately following the DSPN Spine Summit 2016 either while you are still in Orlando or from the convenience of your home or office.

Disclosures

The Accreditation Council for Continuing Medical Education Updated Standards for Commercial Support requires that anyone in a position to control the content of the educational activity has disclosed all financial relationships with any commercial interest. Failure or refusal to disclose or the inability to satisfactorily resolve the identified conflict may result in the withdrawal of the invitation to participate in any of the CNS educational activities. The ACCME defines a “commercial interest” as any entity producing, marketing, re-selling or distributing healthcare goods or services consumed by, or used on, patients.

FDA Statement

Some drugs or medical devices demonstrated at the DSPN Spine Summit 2016 have not been cleared by the FDA or have been cleared by the FDA for specific purposes only. The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical devices he or she wishes to use in clinical practice. The CNS policy provides that “off label” uses of a drug or medical device may be described at the DSPN Spine Summit 2016 so long as the “off label” use of the drug or medical device is also specifically disclosed. Any drug or medical device is “off label” if the described use is not set forth on the products approval label. It is also each speaker’s responsibility to include the FDA clearance status on any device or drug requiring FDA approval discussed or described in their presentation or to describe the lack of FDA clearance for any “off label” uses discussed. Speakers from the audience are also required, therefore, to indicate any relevant personal/professional relationships as they discuss a given topic.
Speaker Ready Room

The Speaker Ready Room is located in South China Sea. The hours are:

Wednesday, March 16 11:00 am—5:30 pm
Thursday, March 17 7:00 am—5:30 pm
Friday, March 18 6:30 am—6:00 pm
Saturday, March 19 6:30 am—12:00 pm

All speakers and abstract presenters should visit the Speaker Ready Room prior to their presentation. All Scientific Session faculty are required to check in at the Speaker Ready Room at least 2 hours prior to the start of your session.

Exhibit Hall Pacifica Ballroom 1-6

Thursday, March 17 9:00 am—7:00 pm
Friday, March 18 9:00 am—2:00 pm

Registration Registration North Desk

Wednesday, March 16 11:00 am—5:30 pm
Thursday, March 17 7:00 am—5:30 pm
Friday, March 18 6:30 am—6:00 pm
Saturday, March 19 6:30 am—12:00 pm

No Smoking Policy

Smoking is not permitted at any official Section on Disorders of the Spine and Peripheral Nerves Spine Summit 2016 events. The Loews Royal Pacific Resort is a non-smoking hotel.

Media Guidelines

The Section on Disorders of the Spine and Peripheral Nerves is pleased to welcome media representatives to the 32nd Annual Meeting. Please note the following press guidelines.

Only individuals who are working for and representing a recognized news organization may register as press. Press with credentials are observers of, and not participants in, all presentation question-and-answer sessions. Questions from press are limited to before and after presentations. Journalists who want to use slides, graphs, and other visuals to illustrate coverage must have the presenter’s permission. Press with credentials may cover all presentations with the exception of debates and the Cahill Controversies, as debate topics do not necessarily reflect the opinions of the participants and cannot be publicized as such. We appreciate your interest in spine and peripheral nerve issues and hope that you have an enjoyable time at Spine Summit 2016.
Disclaimer

The material presented at the DSPN Spine Summit 2016 Annual Meeting has been made available by the Section on Disorders of the Spine and Peripheral Nerves and the CNS for educational purposes only. These materials are not intended to represent the only, nor necessarily the best method or procedure appropriate for the medical situations discussed, but rather are intended to present an approach, view, statement or opinion of the faculty, which may be helpful to others who face similar situations.

All drugs and medical devices used in the United States are administered in accordance with the Food and Drug Administration (FDA) regulations. These regulations vary depending on the risks associated with the drug or medical devices compared to products already on the market, and the scope of the clinical data available.

Some drugs and medical devices demonstrated or described within the print publications of the Section of Disorders of the Spine and Peripheral Nerves jointly sponsored by the CNS have FDA clearance for use for specific purposes or for use only in restricted research settings. The FDA has stated that it is the responsibility of the physician to determine the FDA status of each drug or device he or she wants to use in compliance with applicable laws.

Neither the content (written or oral) of any course, seminar or other presentation in the program, nor the use of a specific product in conjunction therewith, nor the exhibition of any materials by any parties coincident with the program, should be construed as indicating endorsement or approval of the views presented, the products used or the materials exhibited by the Section on Disorders of the Spine and Peripheral Nerves jointly sponsored by the CNS, or by its committees, commissions or affiliates.

Opening Reception

Wantilan Pavilion

Wednesday, March 16
6:30 – 8:00 pm

Experience the natural elegance of the islands in a secluded, dramatic setting with a lava-rock fire pit, tiki torches, and exotic foliage. Enjoy a lavish array of food and beverages and listen to live entertainment as you network with old friends and new colleagues at the Opening Reception. Each medical attendee and spouse/guest registered for the meeting will receive one complimentary ticket. Resort casual attire is recommended.

Young Neurosurgeons’ Dinner

Promenade Deck

Friday, March 18
6:45 – 9:00 pm

All residents, fellows, and young neurosurgeons are welcome. RSVP at the registration desk.
The Congress of Neurological Surgeons controls the content and production of this CME activity and attempts to assure the presentation of balanced, objective information. In accordance with the Standards for Commercial Support established by the Accreditation Council for Continuing Medical Education, speakers are asked to disclose any relationship they have with commercial companies which may be related to the content of their lecture.

Speakers who have disclosed a relationship with commercial companies whose products may have a relevance to their presentation are listed below. Faculty members who are also considered Planners are designated by P. Any planner or faculty member not on the disclosure list has stated they have nothing to disclose.

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C. Rory Goodwin, MD, PhD
Grants - UNCF Merck Postdoctoral Fellow and has received an award from the 28 Burroughs Wellcome Fund. This article reflects the views of the author and should not be construed to represent the FDA's views or policies. (6)

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33rd Annual Meeting of the Section on Disorders of the Spine and Peripheral Nerves

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Las Vegas, Nevada
March 8–11, 2017