Thursday, Nov 30, 2017
Regency Ballroom

7:00–7:10 am  Welcome and Announcements
Louis G. Jenis, MD

7:11–7:48 am  Session I: Myelopathy I

time: TBD

7:11–7:16 am  Presentation #1
Effect of Cervical Decompression Surgery on Gait in Cervical Spondylotic Myelopathy Patients
Ram Haddas, PhD; Raj Arakal, MD; Akwasi Boah, MD; Theodore Belanger, MD; Kevin L. Ju, MD

7:17–7:22 am  Presentation #2
Surgical Outcome of Elderly Patients Over 80 Years with Cervical Spondylotic Myelopathy
Norihiro Isogai, MD; Junichi Yamane; Akio Iwanami; Hitoshi Kono; Yoshimori Kobayashi, MD, PhD;
Nobuyuki Fujita; Mitsu Yagi, MD, PhD; Kota Watanabe, MD, PhD; Kazuya Kitamura; Yuta Shiono, MD;
Ken Ishii, MD; Masaya Nakamura, MD; Morio Matsumoto, MD; Narihito Nagoshi; KSRG members

7:23–7:28 am  Presentation #3
What is the Role of Gait Analysis in the Evaluation of Walking Disturbance in the Cervical Myelopathy
Patients? A Comparison Between Pre- and Post-Operative Data in Surgically Treated Cervical
Myelopathy Patients
Nam Ik Cho, MD; Jae Hwan Cho, MD; Jung-Ki Ha, MD; Chang Ju Hwang, MD, PhD; Choon Sung Lee,
MD, PhD; Dong-Ho Lee, MD, PhD

7:29–7:34 am  Presentation #4
Two-Year Surgical Outcomes of Patients with Cervical Myelopathy: An Analysis of the Impact of Patient
Characteristics, Operative Data, and Preoperative Nonoperative Treatment Modalities
Peter G. Passias, MD; Kris Radcliff, MD; Robert E. Isaacs, MD; Paul M. Arnold; Kristina Bianco, BA;
Samantha Horn, BA; Gregory W. Poorman, BS; Sun Yang, BA; Alexander R. Vaccaro, MD; Michael C. Gerling, MD

7:35–7:48 am  Discussion

7:49–8:26 am  Session II: Motion Preservation

time: TBD

7:49–7:54 am  Presentation #5
Facet Joint Osteoarthritis Progress After Insertion of Artificial Disc Replacement: A Five-Year Follow-Up
of a Prospective Randomized Controlled Study
Anna MacDowall, MD; Martin Skeppholm, MD, PhD; Claes Olerud, MD, PhD

7:55–8:00 am  Presentation #6
Long-Term Outcomes of Arthroplasty for Cervical Myelopathy vs. Radiculopathy, and Arthroplasty vs.
Arthrodesis for Cervical Myelopathy
Jeffrey R. McConnell, MD; Matthew F. Gornet, MD; K. Daniel Riew, MD; Todd H. Lanman, MD;
J. Kenneth Burkus, MD; Scott D. Hodges, DO; Randall F. Dryer, MD

8:01–8:06 am  Presentation #7
Comparison of 7-Year Results of One-Level vs. Two-Level Cervical Disc Arthroplasty and Anterior
Cervical Fusion
Jeffrey R. McConnell, MD; Todd H. Lanman, MD; Matthew F. Gornet, MD; J. Kenneth Burkus, MD;
Randall F. Dryer, MD; Scott D. Hodges, DO

8:07–8:12 am  Presentation #8
Single-Level Cervical Arthrodesis Increases Adjacent Segment Midrange Motion
William Anderst, PhD; Tyler West; William Donaldson, MD; Joon Yung Lee, MD; James Kang, MD

8:13–8:26 am  Discussion
8:27–9:04 am  
**Session III: Cervical Deformity**  
**TBD**

8:27–8:32 am  
**Presentation #9**  
**Moderators:**  
Cervical Mismatch: The Normative Value of T1s-C1 and Its Ability to Predict Ideal Cervical Lordosis  
**Blake Staub, MD; Renaud Lafage; Han Jo Kim, MD; Christopher I. Shaffrey, MD; Gregory Mundis, MD; Richard Hostin, MD; Douglas Burton; Peter G. Passias, MD; Christopher Ames, MD; Eric O. Klineberg, MD; Robert Shay Bess, MD; Frank Schwab, MD; Virginie Lafage, PhD; International Spine Study Group**

8:33–8:38 am  
**Presentation #10**  
Analysis of Prospective Collection of 374 Osteotomies in 99 Patients with Adult Cervical Deformity  
**Themistocles S. Protopsaltis, MD; Alexandra Soroceanu, MD; Justin S. Smith, MD; Munish Gupta, MD; Renaud Lafage; Peter G. Passias, MD; D. Kojo Hamilton; Eric Klineberg, MD; Virginie Lafage, PhD; Frank Schwab, MD; Douglas Burton, MD; Robert Shay Bess, MD; Christopher I. Shaffrey, MD; Christopher Ames, MD; International Spine Study Group**

8:39–8:44 am  
**Presentation #11**  
Prospective Multicenter Analysis of Clinical and Radiographic Outcomes Following Surgical Correction of Patients with Moderate to Severe Cervical Deformities and Horizontal Gaze Disruption  
**Themistocles S. Protopsaltis, MD; Subaraman Ramachandran, MBBS, MS; Jared C Tishelman; Justin S. Smith, MD; Daniel Sciubba, MD; Peter G. Passias, MD; Renaud Lafage; Eric O. Klineberg, MD; Virginie Lafage; Robert A. Hart, MD; Douglas C. Burton, MD; Christopher I. Shaffrey, MD; Frank J. Schwab, MD; Christopher Ames, MD; International Spine Study Group**

8:45–8:50 am  
**Presentation #12**  
Assessment of Cervical Spine Deformity Flexibility Using Supine Advanced Imaging  
**Brandon P. Hirsch, MD; Nina Fisher, BS; Yosef Dastagirzada, BA; Jared Tishelman, BS; Themistocles S. Protopsaltis, MD**

8:51–9:04 am  
Discussion

9:05–9:35 am  
**Break**  
**Exhibit Hall–Grand Ballroom**

9:36–10:13 am  
**Session IV: Trauma**  
**TBD**

9:36–9:41 am  
**Presentation #13**  
The Role of CT Angiography in Changing Management in Patients with Cervical Fractures  
**Arash Emami, MD; Conor Dunn, MD; Jeffrey Moore, MD; Nancy Moontasri, MD; Kimona Issa, MD; Michael Faloon, MD; Kumar Sinha, MD; Ki Soo Hwang, MD**

9:42–9:47 am  
**Presentation #14**  
Early vs. Delayed Reduction of Cervical Spine Dislocation with Complete Motor Paralysis – A Multicenter Study  
**Kosei Nagata, MD; Yasushi Oshima, MD, PhD; Hirotaka Chikuda, MD, PhD**

9:48–9:53 am  
**Presentation #15**  
Cervical Spine Trauma in Children: Analysis of Changes in Incidence, Etiology, and Concurrent Injuries Among 11,323 Pediatric Patients Over a 10-Year Period  
**Gregory W. Poorman; Bryan M Beaubrun; Samantha R. Horn; Bassel G. Diebo; Shaleen Vira; Olivia Bono; Rafeal De La Garza; John Moon; Charles Wang; Brandon P. Hirsch; Jared C. Tishelman; Peter L. Zhou; Michael C. Gerling, MD; Peter G. Passias, MD**

9:54–9:59 am  
**Presentation #17**  
Incidence of Cervical Spine Injuries Sustained During Sporting Activities  
**J. Mason DePasse, MD; Wesley Durand, BS; Mark A. Palumbo, MD; Alan H. Daniels, MD**

10:00–10:13 am  
Discussion

10:14–10:23 am  
Special Projects Committee Report  
**TBD**

10:24–11:15 am  
**Introduction of Presidential Guest Speaker**  
**Darrel S. Brodke, MD**  
**Henry H. Bohlman Presidential Guest Lecture:** Lessons in Military Aviation & Leadership Applied to Surgery  
**Col. Lynn I. Scheel, USAF**

11:16–11:25 am  
Discussion

11:25 am  
Adjourn to Industry Workshops – Lunch Included, Prior Registration Not Required, No CME Credits

11:30 am–1:30 pm  
Workshop 1: Medtronic

11:30 am–1:30 pm  
Workshop 2: K2M
<table>
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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>11:30 am–1:30 pm</td>
<td>Workshop 3: NuVasive</td>
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<td>11:30 am–1:30 pm</td>
<td>Workshop 4: Stryker</td>
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<td>11:30 am–1:30 pm</td>
<td>Workshop 5: Zimmer Biomet</td>
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| 1:35–2:30 pm   | Symposium: How the Experts Deal with Adverse Events - Prevention, identification and Management  
| Moderator:     | TBD                                                                  |
| 1:35–1:45pm    | Case Presentations                                                   |
| 1:46–1:56pm    |                                                                 |
| 1:57–2:07pm    |                                                                 |
| 2:08–2:16pm    |                                                                 |
| 2:17–2:30pm    | Discussion                                                           |
| 2:31–2:51 pm   | Break                                                               |
| 2:52–2:57 pm   | Session V: Anterior Surgery I                                        |
| Moderators:    | TBD                                                                  |
| 2:52–3:03 pm   | Return to Play After Anterior Cervical Discectomy and Fusion in Professional Athletes  
| Presentation #18 | Robert G. Watkins, IV, MD; David Chang, MD; Robert G. Watkins, III, MD; Marina Spine Center |
| 3:04–3:09 pm   | Preliminary Results: Cervical Degenerative Disc Disease and Subclinical Discitis: Cause or Contaminant?  
| Presentation #20 | Amit Bhandutia, MD; Luke Brown, MD, MBA; Eve Hoffman, MD; Eugene Koh, MD, PhD; Kelley Banagan, MD; Steven Ludwig, MD; Daniel Gelb, MD |
| Presentation #21 | Do-Yon Hwang, MD; Dong-Ho Lee, MD, PhD; Jae Hwan Cho, MD; Chang Ju Hwang, MD, PhD; Choon Sung Lee, MD, PhD; Sae Min Hwang, MD |
| 3:16–3:21 pm   | CT Scan: Always Necessary for the Preoperative Planning in the Cervical Spine Surgery?  
| Presentation #22 | Seungjin Choi, MD; Kyung-Soo Suk, MD; Hak-Sun Kim, MD; Seong-Hwan Moon MD; Hwan-Mo Lee, MD; Jae-Ho Yang, MD; Michael Nelson Perez Lim, MD; Sung-Jin Park, MD; Adrian Alaras, MD |
| 3:22–3:27 pm   | Prevalence, Progression, Clinical Implications, and Risk Factors of Heterotopic Ossification After Cervical Total Disc Replacement at 7 Years  
| Presentation #23 | Pierce D. Nunley, MD; David A. Cavanaugh, MD; Eubulus J. Kerr, III, MD; Phillip Andrew Utter, MD; Peter G. Campbell, MD; Kelly A. Frank, MS; Marcus B. Stone, PhD |
| 3:28–3:41 pm   | Discussion                                                           |
| 3:42–4:30 pm   | Session VI: Myelopathy II                                            |
| Moderators:    | TBD                                                                  |

Program is tentative; times & topics may change
3:42–3:47 pm  Presentation #24  
Comparison of Anterior and Posterior Surgery for Degenerative Cervical Myelopathy – An MRI-Based Propensity Score-Matched Analysis Using Data from the Prospective Multicenter AOSpine CSM North America and International Studies  
So Kato, MD; Aria Nouri, MD, MSc; Dongjin Wu, MD; Satoshi Nori, MD, PhD; Lindsay Tetreault, HBSc; Michael Fehlings, MD, PhD

3:48–3:53 pm  Presentation #25  
Do Laminoplasty Conducted by Junior Surgeons Affect Clinical Outcomes for the Treatment of Cervical Spondylotic Myelopathy? – Comparison Between Board- and Non Board-Certified Spine Surgeons  
Narihito Nagoshi, MD, PhD; Akio Iwanami, MD, PhD; Norihiro Isogai, MD; Masayuki Ishikawa, MD, PhD; Kenya Nojiri, MD, PhD; Nobuyuki Fujita, MD, PhD; Mitsuru Yagi, MD, PhD; Kota Watanabe, MD, PhD; Takashi Tsuji, MD, PhD; Kenshi Daimon, MD; Ken Ishii, MD, PhD; Masaya Nakamura, MD, PhD; Morio Matsumoto, MD, PhD; Junichi Yamane, MD, PhD

3:54–3:59 pm  Presentation #26  
A Comparative Study for Cervical Spondylotic Myelopathy with One- or Two-Level Lesions -Anterior Cervical Discectomy with Fusion vs. Selective Laminoplasty  
Kenichiro Sakai, MD, PhD; Toshitaka Yoshii, Alsuyuki Kawabata, MD; Yu Matsukura, Tsuyoshi Yamada, Takashi Hirai, Yoshiyasu Arai, MD, PhD; Astushi Okawa

4:00–4:05 pm  Presentation #27  
Comparison of Surgical Outcomes Between Open-Door, Double-Door Laminoplasty, and Selective Laminectomy with Muscle Preservation for Cervical Spondylotic Myelopathy: A Multicenter Study of 881 Cases  
Junichi Yamane, MD, PhD; Akio Iwanami; Hitoshi Kono; Tokunaga Shigeyuki, MD, PhD; Mitsuru Yagi, MD, PhD; Nobuyuki Fujita; Kota Watanabe, MD, PhD; Nonhiro Isogai, MD; Satoshi Suzuki, MD, PhD; Yoshiomi Kobayashi, MD, PhD; Ken Ishii, MD; Masaya Nakamura, MD; Mono Matsumoto, MD; Narihito Nagoshi

4:06–4:11 pm  Presentation #28  
Investigating the Utility of Intra-Operative Neuropsychological Monitoring for Anterior Cervical Discectomy and Fusion: Analysis of Over 140,000 Cases from a National Inpatient Dataset  
Jetan H. Badhiwala, MD; Farshad Nassiri, MD; Christopher D. Witw, MD, MSc; Alireza Mansouri, MD, MSc; Saleh A. Almenawer, MD, MSc; Leodante da Costa, MD, MSc; Michael G. Fehlings, MD, PhD; Jefferson R. Wilson, MD, PhD

4:12–4:17 pm  Presentation #29  
Comparison of Preoperative and Postoperative Cervical Lordosis in Patients Undergoing Cervical Laminoplasty - Effect of C3 Laminectomy  
Philip M. Sinatra, MD; Colleen Peters, MA; Steven J. McAnany, MD; Michael P. Kelly, MD; Lukas P. Zebala, MD

4:18–4:30 pm  Discussion  

4:30–6:30 pm  Welcome Reception  
Exhibit Hall–Grand Ballroom  

7:00–7:10 am  Welcome and Announcements  
Louis G. Jenis, MD

7:11–7:54 am  Session VII: Posterior Surgery  
Moderators: TBD

7:11–7:16 am  Presentation #30  
A Comparative Study Between Two Types of Cervical Laminoplasty on the Deep-Extensor Volume and Axial Neck Pain-Minimum Two-Year Follow-Up Results  
Feifei Zhou, MD; Yu Sun, MD

7:17–7:22 am  Presentation #31  
The Correlation Between Cervical Alignment and Posterior Cervical Muscle Fatty Infiltration at Baseline in Cervical Deformity Patients  
Peter G. Passias, MD; Charles Wang, BS; Gregory W. Poorman, BA; Samantha Horn, BA; Han Jo Kim, MD; Virginie LaFage, PhD; Michael C. Gerling, MD

7:23–7:28 am  Presentation #32  
Increase in Cervical Lordosis Decreases Postoperative Neck Pain After Laminectomy and Fusion  
Anthony M. DiGiorgio, DO, MHA; Darryl Lau, MD; Michael S. Virk, MD, PhD; Ethan A. Winkler, MD, PhD; Khoi Than, MD; Andrew Chan, MD; Dean Chou, MD; Praveen V. Mummaneni, MD

7:29–7:34 am  Presentation #33  
A Prospective Cohort Study of Postoperative Spinal Epidural Hematoma After Cervical Laminoplasty  
Kenichiro Sakai, MD, PhD; Toshitaka Yoshii; Alsuyuki Kawabata, MD; Yu Matsukura; Tsuyoshi Yamada; Takashi Hirai; Yoshiyasu Arai, MD, PhD; Astushi Okawa

Program is tentative; times & topics may change
7:35–7:40 am  
Presentation #34  
Long-Term Fate of C3-7 Arthrodesis: 4-Level ACDF vs. Cervical Laminectomy and Fusion  
*Colin W. Niezgoda, PA; John K. Houten, MD, FAANS*

7:41–7:54 am  
Discussion

7:55–8:38 am  
**Session VIII: Cervical Deformity**  
**Moderators:** TBD

7:55–8:00 am  
Presentation #35  
What is a Right Distal Fusion Level for Prevention of Sagittal Imbalance in Multilevel Posterior Cervical Spine Surgery; C7 or T1?  
*Seungjin Choi, MD; Kyung-So Sik, MD; Hak-Sun Kim, MD; Hwan-Mo Lee, MD; Seong-Hwan Moon, MD; Jae-Ho Yang, MD; Michael Lim, MD; Sung-Jin Park, MD; Adrian, Alaras, MD*

8:01–8:06 am  
Presentation #36  
Distal Junctional Kyphosis (DJK) After Cervical Deformity Surgery: Analysis with in-Construct Measurements  
*Themistocles S. Protopsaltis, MD; Jared C. Tishelman; Subaraman Ramachandran, MBBS, MS; Renaud Lafage; Justin S. Smith, MD; Han Jo Kim, MD; Peter G. Passias, MD; Gregory M. Mundis, MD; D. Kojo Hamilton; Munish C. Gupta, MD; Robert A. Hart, MD; Robert Shay Bess, MD; Christopher I. Shaffrey, MD; Christopher P. Ames, MD; International Spine Study Group*

8:07–8:12 am  
Presentation #37  
*Peter G. Passias, MD; Gregory W. Poorman, BA; Virginie LaFage, PhD; Justin Smith, MD; Christopher Ames, MD; Frank Schwab, MD; Christopher I. Shaffrey, MD; Samantha R. Horn, BA; Charles Wang, BA; Robert Hart, MD; Douglas C. Burton, MD; Renaud Lafage; Robert Shay Bess, MD; Daniel Sciubba, MD; International Spine Study Group*

8:13–8:18 am  
Presentation #38  
High C2-T3 Sagittal Imbalance is an Independent Predictor of Recurrent Proximal Junctional Kyphosis  
*Shan-Jin Wang, Aguwa K. Okezie, MD; Christopher I. Shaffrey, MD; Gregory M. Mundis, MD; Richard A. Hostin, MD; Douglas Burton, Christopher Ames, MD; Eric O. Klineberg, MD; Renaud Lafage, Justin S. Smith, MD; Peter G. Passias, MD; Frank J. Schwab, MD; Virginie Lafage, PhD; Han Jo Kim, MD; International Spine Study Group*

8:19–8:24 am  
Presentation #39  
Improvement in Ames-ISSG Cervical Deformity Classification Modifier Grades Correlate to Clinical Improvement and Likelihood of Reaching Mcid in Multiple Metrics: Series of 73 Patients with 1-Year Follow-Up  
*Samantha R. Horn, BA; Peter G. Passias, MD; Renaud Lafage, MS; Justin S. Smith MD; Gregory W. Poorman, BA; Bassel G. Diebo, MD; Christopher I. Shaffrey, MD; Daniel M. Sciubba, MD; Eric O. Klineberg, MD; Themistocles S. Protopsaltis, MD; Frank J. Schwab, MD; Robert Shay Bess, MD; Virginie Lafage, PhD; Christopher Ames, MD; International Spine Study Group*

8:25–8:38 am  
Discussion

8:39–8:47 am  
2017 CSRS European Traveling Fellowship Report  
*Addisu Mesfin, MD; Ahmad Nassr, MD*

8:48–8:53 am  
Preview CSRS 2018 Annual Meeting in Scottsdale, AZ  
*TBD*

8:54–8:59 am  
Preview CSRS Asia Pacific Section 2018 Annual Meeting in New Delhi, India  
*Prof. S. Rajasekaran*

9:00-9:05 am  
Preview CSRS European Section 2018 Annual Meeting in Lisbon, Portugal  
*Ronald H M A Bartels, MD, PhD*

9:06–9:36 am  
**BREAK**  
Exhibit Hall–Grand Ballroom

9:37–10:39 am  
**Session IX: HIGHLIGHT POSTER PRESENTATIONS**  
**Moderators:** TBD

9:37–9:39 am  
Presentation #40  
Diagnostics/Imaging  
*Increased Signal Intensity of the Spinal Cord on T2-Weighted Magnetic Resonance Images and Correlation with Cervical Sagittal Alignment and the Severity of Spinal Cord Compression*

9:40–9:42 am  
Presentation #41  
Congenital Cervical Spine Stenosis in a Global Cohort of Patients with Degenerative Cervical Myelopathy: A Report Based on a MRI Diagnostic Criterion

Program is tentative; times & topics may change
Aria Nouri, MD, MSc; Lindsay Tetreault, PhD; Allan Martin, MD; Anick Nater, MD; Satoshi Nori, MD; Michael G. Fehlings, MD, PhD

9:43–9:45 am
Presentation #42
A 20-Year Prospective Longitudinal Study on Degeneration of the Cervical Spine Using MRI in Volunteers
Kenshi Daimon, MD; Hirokazu Fujiwara, MD, PhD; Yuji Nishiwaki, MD, PhD; Eijiro Okada, MD, PhD; Kenya Nojiri, MD, PhD; Masahiko Watanabe, MD, PhD; Hiroyuki Katoh, MD, PhD; Kentaro Shimizu, MD, PhD; Hiroki Ishihama, MD; Nobuyuki Fujita, MD, PhD; Takashi Tsuji, MD, PhD; Masaya Nakamura, MD, PhD; Morio Matsumoto, MD, PhD; Kota Watanabe, MD, PhD

9:46–9:48 am
Presentation #43
Does the Sagittal Alignment of the Cervical Spine Have an Impact On Disc Degeneration? 20-Year Follow-Up of Asymptomatic Volunteers
Eijiro Okada, MD, PhD; Kenshi Daimon, MD; Hirokazu Fujiwara, MD, PhD; Yuji Nishiwaki, MD, PhD; Kenya Nojiri, MD, PhD; Masahiko Watanabe, MD, PhD; Hiroyuki Katoh, MD, PhD; Kentaro Shimizu, MD, PhD; Hiroki Ishihama, MD; Nobuyuki Fujita, MD, PhD; Takashi Tsuji, MD, PhD; Masaya Nakamura, MD, PhD; Morio Matsumoto, MD, PhD; Kota Watanabe, MD, PhD

9:49–9:51 am
Presentation #44
The Many Faces of the Japanese Orthopedic Association (JOA) Score: An Outcome Measure with Face Validity for Assessment of Patients with Cervical Spondylotic Myelopathy
Julio C. Furlan, MD, MBA, MSc, PhD, FRCP; B. Catharine Craven, BA, MD, MSc, FRCP

9:52–9:57 am
Discussion

Surgical Techniques

9:58–10:00 am
Presentation #45
The Effectiveness of Local Autogenous Bone Dust as an Implantation Filler in Anterior Cervical Discectomy and Fusion
Sae Min Hwang, MD: Dong-Ho Lee, MD, PhD; Jae Hwan Cho, MD; Chang Ju Kwang, MD, PhD; Choon Sung Lee, MD, PhD; Do-yon Hwang, MD; Sung Hoo Kim, MD

10:01–10:03 am
Presentation #46
Safety and Efficacy of a Novel Anterior Decompression Technique (Vertebral Body Sliding Osteotomy) for Ossification of Posterior Longitudinal Ligament of the Cervical Spine
Chul Gie Hong, MD; Jae Hwan Cho, MD; Chang Ju Kwang, MD, PhD; Choon Sung Lee, MD, PhD; Jung-Ki Ha, MD: Dong-Ho Lee, MD

10:04–10:06 am
Presentation #47
Dose Additional Uncinate Resection Increase Pseudarthrosis Following Anterior Cervical Discectomy and Fusion?
Jong-Min Baik, MD; Jae Hwan Cho, MD; Youn-Suk Joo, MD; Chang Ju Kwang, MD; Choon Sung Lee, MD, PhD; Dong-Ho Lee, MD

10:07–10:09 am
Presentation #48
Sulfated Glycopeptide Nanostructures Scaffold for Spinal Arthrodesis
Gurmit Singh, BS; Sungsoo S. Lee, PhD; Timmy Fymer, PhD; Mark T. McClendon, PhD; Andrew D. Schneider, MD; Karina M. Katchko, BS; Danielle S. Chun, MD; Joseph A. Weiner, BS; Ralph W. Cook, BS; Sameer Singh, BS; Soyoon Jeong, MS; Chawon Yun, PhD; Samuel I. Stupp, PhD; Erin L. Hsu, PhD; Wellington K. Hsu, MD

10:10–10:12 am
Presentation #49
Surgical Site Drains and Postoperative Complications Following Posterior Cervical Spine Surgery: A Multicenter Retrospective Study
Daniel B. Herrick; Joseph E. Tanenbaum; Marc Mankarious; Sagar Vallabh; Eitan Fleischman; Swamy Kurra, MBBS; Shane M. Burke, BS; Marie Roguski; Thomas E. Mroz, MD; William F. Lavelle, MD; Jeffrey E. Florman; Ron I. Riesenburger

10:13–10:18 am
Discussion

Healthcare Economics/Value

10:19–10:21 am
Presentation #50
Cost-Utility Analysis of Cervical Deformity Surgeries Using One-Year Outcome
Gregory W. Poorman, BA; Peter G. Passias, MD; Rabia Qureshi, BS; Hamid Hassanzadeh, MD; Amit Jain; Michael P. Kelly, MD; Richard A. Hostin, MD; Christopher P. Ames, MD; Justin S. Smith, MD; Virginie LaFage, PhD; Douglas C. Burton, MD; Robert Shay Bess, MD; Christopher I. Shaffrey, MD; Frank J. Schwab, MD; Munish C. Gupta, MD; International Spine Study Group

10:22–10:24 am
Presentation #51
Preparing for Bundled Payments in Cervical Spine Surgery: Do We Understand the Influence of Patient, Hospital, and Procedural Factors on the Cost and Length of Stay?
Andrew J. Pugely, MD: Cameron Barton, MD; Comron Saffi, MD; Yubo Gao, PhD
10:25–10:27 am  Presentation #52
What are the Costs of Cervical Radiculopathy in the Year Prior to Anterior Cervical Discectomy and Fusion?
Cameron Barton, MD; Nicholas Bedard, MD; Comron Saifi, MD; Andrew J Pugely, MD

10:28–10:30 am  Presentation #53
Reimbursement and Charges Related to a 90-Day Episode of Care for a One-Or Two-Level Anterior Cervical Discectomy and Fusion
Sohrab S. Virk, MD, MBA; Frank M. Phillips, MD; Nikhil Jain, MD; Safdar N. Khan, MD

10:31–10:33 am  Presentation #54
The Medico-Legal Landscape of Spine Surgery: How Do Surgeons Fare?
Melvin C. Makhni, MD, MBA; Paul J. Park, MD; Jesus Jimenez; Comron S. Saifi, MD; Jon-Michael Caldwell, MD; Alex Ha, MD; Bianca Figueroa-Santana; Ronald A. Lehman Jr., MD; Mark Weidenbaum, MD

10:34–10:39 am  Discussion

10:40–11:23 am  Session X: Spinal Cord
Moderators: TBD

10:40–10:45 am  Presentation #55
Physical Performance Decreases in the Early Stage of Cervical Myelopathy Before the Myelopathic Signs Appear: The Wakayama Spine Study
Keiji Nagata, MD; Noriko Yoshimura, MD, PhD; Hiroshi Hashizume, MD; Yuyu Ishimoto; Hiroshi Yamada, MD; Akihiro Minamide; Shigeyuki Muraki; Munehito Yoshida, MD

10:46–10:51 am  Presentation #56
Enhancement of Neurological Recovery and Attenuation of Inflammation in Cervical Spondylotic Myelopathy with Intravenous IgG
Wen Ru Yu, MD; Pia Maria Vidal, BS, PhD; James Hong, BS, PhD; Anna Maria Badner, BS; Michael G. Fehlings, MD, PhD

10:52–10:57 am  Presentation #57
Neural Stem Cell Mediated Recovery Is Enhanced by Chondroitinase ABC Pretreatment in Chronic Cervical Spinal Cord Injury
Hidenori Suzuki, MD, PhD; Christopher S. Ahuja; Kajana Satkunendrarajah; Narihito Nagoshi; Toshihiko Taguchi, MD, PhD; Michael G. Fehlings, MD, PhD

10:58–11:03 am  Presentation #58
Does Spinal Cord Compression Status Affect Pre- and Post-Operative Neurological Conditions?
Takanori Niimura, MD; Hisanori Mihara, MD; Yasunori Tatara, MD; Yohei Itoh, MD; Atsushi Goda, MD

11:04–11:09 am  Presentation #59
Multiparametric Quantitative MRI Detects Tissue Injury in Asymptomatic Cervical Spinal Cord Compression
Allan R. Martin, MD; Benjamin De Leener, MSc; Julien Cohen-Adad, PhD; David W. Cadotte, MD, PhD; Aria Nouri, MD, MSc; Jefferson R. Wilson, MD, PhD; Lindsay Tetreault, PhD; Adrian Crawley, PhD; David J. Mikulis, MD, PhD; Howard Ginsberg, MD, PhD

11:10–11:23 am  Discussion

11:24–11:29 am  Introduction of CSRS President
Jeffrey C. Wang, MD

11:30–12:00 pm  PRESIDENTIAL ADDRESS
Darrel S. Brodke, MD

12:02–1:05 pm  Non-Member Lunch

12:02–1:05 pm  Member Lunch  Location: Atlantic Ballroom

1:06–1:53 pm  Session XI: Complications
Moderators: TBD

1:06:1:11 pm  Presentation #60
Predicting the Occurrence of Complications Following Corrective Cervical Deformity Surgery: Analysis of a Prospective Multicenter Database Using Predictive Analytics
Peter G. Passias, MD; Cheongeun Oh, PhD; Samantha R. Horn, BA; Jessica Lavery, MS; Han Jo Kim MD; D. Kojo Hamilton, MD; Daniel M. Scibba, MD; Brian J. Neuman, MD; Aaron J. Buckland, MD; Gregory W. Poorman, BA; Themistocles S. Protopsisalitis, MD; Eric O. Klineberg, MD; Christopher Ames, MD; Justin S. Smith, MD; Virginia Laffage, PhD; International Spine Study Group
1:12-1:17 pm  
**Presentation #61**  
Risk Factor Analysis of Postoperative Subaxial Cervical Alignment Change Following Upper Cervical Fixation  
*Jae Taek Hong, MD, PhD; Il Sup Kim; Jung Jae Lee; Jong Beom Lee; Jun Young Kim; Ho Jin Lee; Jae Yeol Kwon*

1:17-1:22 pm  
**Presentation #62**  
The Risk Factor Analysis of Change of Intraoperative Neurophysiologic Monitoring During Cervical Open-Door Laminoplasty  
*Sanghyun Han, MD; Seung-Jae Hyun, MD, PhD; Tae-Ahn Jahng, MD, PhD; Ki-Jeong Kim, MD, PhD; Kyung Seok Park, MD, PhD*

1:23-1:28 pm  
**Presentation #63**  
What is the Best Available Patient-Reported Outcome Measure for Dysphagia in Cervical Spine Surgery? A Comparison of the Eating Assessment Tool (EAT-10) and Swal-Qol  
*Tyler J. Jenkins, MD; Surabhi Bhatt, BS; Kern Singh, MD; Wellington K. Hsu, MD; Alpesh A. Patel, MD*

1:29-1:34 pm  
**Presentation #64**  
Etiology and Surgical Strategies of Reoperation After Cervical Laminoplasty  
*Yanbin Zhao, MD; Yu Sun, MD*

1:34–1:40 pm  
**Presentation #65**  
Prevention of Pseudoarthrosis in Multilevel ACDF with Individual Level Plate Fixation vs. Single Long Plate  
*Richard A. Hynes, MD; Devin K. Datta, MD; Chad Harris, BS*

1:41-1:53 pm  
**Discussion**

1:54-3:07 pm  
**Session XII: RESEARCH SESSION**  
**Moderators:** TBD

1:54–2:04 pm  
**Announcement—2017 Research Grant Winners**

2:05–2:06 pm  
**Introduction—Research Grant Updates**

2:07–2:12 pm  
**2016 Medtronic**  
Analysis of the Human Serum Proteome in Cervical Radiculopathy Patients to Predict Who Will Fail Conservative Treatment and Require Surgery  
*Steven M. Presciutti, MD*

2:13–2:18 pm  
**Does Psychological Distress Impact the Clinical Outcomes in Patients Undergoing Cervical Spine Surgery, and Should We Intervene? A Prospective, Blind and Placebo-Controlled Trial**  
*Peter G. Passias, MD*

2:19–2:24 pm  
**2016 CSRS 21st Century Research and Education Grants**  
Resveratrol as a Therapeutic to Reverse the Adverse Effects of Cigarette Smoke on Bone  
*Erin Hsu, PhD*

2:25–2:30 pm  
**Exploration for Novel Molecular Biomarkers of Acute Spinal Cord Injury**  
*Masao Koda, MD*

2:31–2:36 pm  
**2016 Seed Starter Grants**  
Loss of Range of Motion Following Cervical Fusion: Effect on Activities of Daily Living Kinematics and Patient Satisfaction  
*Kevin M. Bell, PhD*

2:37–2:41 pm  
**Evaluation of Gait Recovery and Energy Expenditure Following Decompression and Stabilization for Cervical Spondylotic Myelopathy**  
*Hamid Hassanzadeh, MD*

2:42–2:59 pm  
**Discussion**

3:00 pm  
**Adjourn**

Program is tentative; times & topics may change

Saturday, Dec 2, 2017

7:00–7:05 am  
**Welcome and Announcements**  
*Louis G. Jenis, MD*
<table>
<thead>
<tr>
<th>Time</th>
<th>Session/Event</th>
<th>Moderators</th>
<th>Details</th>
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<tbody>
<tr>
<td>7:06–7:49 am</td>
<td><strong>Session XIII: Anterior Surgery II</strong></td>
<td>TBD</td>
<td>Tentsative; times &amp; topics may change</td>
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<tr>
<td>7:06–7:11 am</td>
<td>Presentation #66: The Real Costs of ACDF: A Time-Driven Activity-Based Costing Analysis</td>
<td>Gregory D. Schroeder, MD; Alan S. Hilibrand, MD; Christopher K. Kepler, MD, MBA; Kristen J. Nicholson, PhD; Christie Stawicki, BS; Jonathan Paul, BS; Priyanka Kumar, BS; Douglas Holler, MD; Hamadi Murphy, MD, Mark F. Kurd, MD, Barret I. Woods, MD, Kris E. Radcliff, MD; D. Greg Anderson MD; Alexander R. Vaccaro, MD, PhD, MBA; Jeffery A. Rihn MD</td>
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<td>7:12–7:17 am</td>
<td>Presentation #67: Favorable Prognosis for Significant Preoperative Upper Extremity Weakness Following Elective Anterior Cervical Discectomy and Fusion</td>
<td>Arjun S. Sebastian, MD; Scott C. Wagner, MD; Joseph Butler, MD, PhD; Patrick B. Morrisey, MD; Ian D. Kaye, MD; Alan S. Hilibrand, MD; Alexander Vaccaro, MD, PhD; Christopher K. Kepler, MD MBA</td>
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<td>7:18–7:23 am</td>
<td>Presentation #68: Comparison of Neck Pain and Complications of Stand-Alone vs. Conventional Plate and Interbody Fusion</td>
<td>Christian Fisahn, MD; Shiveindra Jeyamohan, MD; Marc Moisi, MD; Fernando Alonso, MD; Daniel C. Norvell, PhD; R. Shane Tubbs, PhD; Rod J. Oskouian, MD; Thomas A. Schildhauer, MD; Jens R. Chapman, MD</td>
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<td>7:24–7:29 am</td>
<td>Presentation #69: Is Two-Level Cervical Disc Replacement More Cost-Effective than Anterior Cervical Discectomy and Fusion at 7-Years?</td>
<td>Robert K. Merrill, BS; Steven J. McAnany, MD; Todd J. Albert, MD; Sheeraz A. Qureshi, MD</td>
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<td>7:30–7:35 am</td>
<td>Presentation #70: Impact of Body Mass Index on Surgical Outcomes, Narcotic Consumption, and Costs Following Anterior Cervical Discectomy and Fusion</td>
<td>Ankur S. Narain, BA; Fady Y. Hijji, BS; Brittany E. Haws, BS; Krishna T. Kudaravalli, BS; Kelly H. Yom, BA; Jonathan Markowitz, BS; Kern Singh, MD</td>
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<td>7:36–7:49 am</td>
<td>Discussion</td>
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<td>7:50–8:45 am</td>
<td><strong>Symposium: 10 Unique Tips and Pearls for Cervical Spine Surgeons</strong></td>
<td>TBD</td>
<td>Tentsative; times &amp; topics may change</td>
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<td>Discussion</td>
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<td>8:50–9:33 am</td>
<td><strong>Session XIV: Outcomes</strong></td>
<td>TBD</td>
<td>Tentsative; times &amp; topics may change</td>
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<td>8:50–8:55 am</td>
<td>Presentation #71: Clinical and Radiographic Outcomes of Patients with Cervical Deformity Secondary to Thoracolumbar Proximal Junctional Kyphosis</td>
<td>Peter G. Passias, MD; Samantha R. Horn, BA; Gregory W. Poorman, BA; Alan H. Daniels, MD; D. Kojo Hamilton, MD; Daniel M. Sciubba, MD; Justin S. Smith, MD; Christopher Shaffrey, MD; Renaud Lafage, MS; Virginie Lafage, PhD; Christopher Ames, MD; Gregory Mundis, MD; Robert Eastlack, MD; Frank Schwab, MD; International Spine Study Group</td>
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<td>8:56–9:01 am</td>
<td>Presentation #72: The Relationship Between Improvements in Myelopathy and Sagittal Realignment in Cervical Deformity Surgery</td>
<td>Peter G. Passias, MD; Samantha R. Horn, BA; Subaraman Ramchandran, MD; Douglas C. Burton, MD; Themistocles S. Protopsaltis, MD; Renaud Lafage, MS; Virginie Lafage, PhD; Gregory W. Poorman, BA; Justin S. Smith, MD; Christopher Ames, MD; Christopher I. Shaffrey, MD; Han Jo Kim, MD; Alexandra Soroceau, MD; Eric Klineberg, MD; International Spine Study Group</td>
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<td>9:02–9:07 am</td>
<td>Presentation #73: Cost-Effectiveness Analysis of Intraoperative Corticosteroid Administration in Anterior Cervical Discectomy and Fusion for Degenerative Disease</td>
<td>Juneyoung L. Yi, MD; Brandon K. Bellows, PharmD, MD; Tyler J. Jenkins, MD; Alpesh A. Patel, MD; Erica F. Bisson, MD, MPH</td>
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Program is tentative; times & topics may change
9:08–9:13 am
Presentation #74
Is There a Preoperative Morphine Equianalgesic Dose that Predicts Ability to Achieve a Clinically Meaningful Improvement Following Spine Surgery?
Joseph B. Wick, BA; Abihan Sivaganesan, MD; Silky Chotai, MD; Kristin R. Archer, PhD, DPT; Samuel L. Posey, BS; Parker T. Evans, BS; Joel R. Campbell, MD; Clinton J. Devin, MD

9:14–9:19 am
Presentation #75
The Natural History of Acute Cervical Radicular Pain
William J. Beckworth, MD; Benjamin Abramoff, MD; Laura Ward, Jacob Lee; Marly Dows-Martinez, S Tim Yoon, MD, PhD

9:20–9:33 am
Discussion

9:34–9:38 am
Announcement of Poster Award Winners

9:39–9:44 am
Presentation of CSRS Medallion to Jeffrey C. Wang, MD

9:45–10:00 am
BREAK

10:01–10:44 am
Session XV: Surgical Outcomes
Moderators: TBD

10:01–10:06 am
Presentation #76
The Impact Of Local Steroid Application on Dysphagia Following an Anterior Cervical Discectomy and Fusion: Preliminary Results of a Prospectively, Randomized, Single Blind Trial
Ankur S. Narain, BA; Fady Y. Hijji, BS; Brittany E. Haws, BS; Benjamin C. Mayo, BA; Dustin H. Massel, BS; Kelly H. Yom, BA; Krishna T. Kudaravalli, BS; Khaled Aboushaala, MD; Kern Singh, MD

10:07–10:12 am
Presentation #77
Do Cervical Spine Surgery Patients Recall Their Preoperative Status? A Cohort Study of Recall Bias in Patient-Reported Outcomes
M. Tayseer Shamaa, MBBS; Ilyas S. Aleem, MD, MSc, FRCSC; Bradford L. Currier, MD; Michael J. Yaszemski, MD, PhD; Heidi Poppendeck; Paul M. Huddleston, MD; Jason Eck, DO, MS; John Rhode, MD; Mohamad Bydon, MD; Brett Freedman, MD; Ahmad Nassr, MD

10:13–10:18 am
Presentation #78
The Impact of Preoperative Depression on Hospital Consumer Assessment of Healthcare Providers and Systems (Hcahps) Survey Results in a Cervical Spine Surgery Setting
Jay M. Levin, BA; Joseph E. Tannenbaum, BA; Thomas E. Mroz, MD; Michael P. Steinmetz, MD

10:19–10:24 am
Presentation #79
Psychosocial Risk Factors for Chronic Opioid Use After Single-Level Cervical Fusion for Radiculopathy: A Workers’ Compensation Population
Mhamad Faour, MD; Joshua T. Anderson, MD; Arnold R. Haas, BS, BA; Rick Percy, PhD; Stephen T. Woods, MD; Uri M. Ahn, MD; Nicholas U. Ahn, MD

10:25–10:30 am
Presentation #80
The Impact of Multiple Patient-Reported Allergies on Clinical Outcomes After Anterior Cervical Discectomy and Fusion
Douglas L. Nestorovski, MD; Steven J. McNaney, MD; Michael P. Kelly, MD; Colleen M. Peters, MA; Lukas P. Zebala, MD

10:31–10:44 am
Discussion

10:45–11:00 am
Session XVI: HIGHLIGHT POSTERS II
Moderators: TBD

10:45–10:47 am
Presentation #81
DEFORMITY
Impact of Obesity on Radiographic Alignment and Short-Term Complications After Surgical Treatment of Adult Cervical Deformity
Peter G. Passias, MD; Gregory W. Poorman, BA; Samantha R. Horn, BA; Alan H. Daniels, MD; D. Kojo Hamilton; Daniel M. Scibuba, MD; Justin S. Smith, MD; Brian J. Neuman; Christopher I. Shaffrey, MD; Virgine LaFage, PhD; Renaud Lafage; Christopher P. Ames, MD; Robert A. Hart, MD; Alex Soroceano, MD; Gregory M. Mundis, MD; Robert K. Eastlack, MD; International Spine Study Group

10:48–10:50 am
Presentation #82
Predictive Model for Distal Juncional Kyphosis After Cervical Deformity Surgery
Peter G. Passias, MD; Dennis Vasquez-Montes, MD; Gregory W. Poorman, MD; Themistocles S. Protopsaltis, MD; Samantha R. Horn, BA; Bassel G. Diebo, MD; Christopher P. Ames, MD; Justin S. Smith, MD; Virgine LaFage, PhD; Renaud Lafage, Eric O. Klineberg, MD; Christopher I. Shaffrey, MD; Robert Shay Bess, MD; Frank J. Schwab, MD; International Spine Study Group
10:51–10:53 am  
Presentation #83  
Identifying Sources of Improvement of Axial Pain in Corrective Cervical Deformity Surgery  
Peter G. Passias, MD; Gregory W. Pooman, MD; Samantha R. Horn, BA; Eric O. Klineberg, MD; Christopher I. Shaffrey, MD; Virginie LaFage, PhD; Themistocles S. Protopsaltis, MD; Christopher P. Ames, MD; Justin S. Smith, MD; Gregory M. Mundis, MD; Brian J. Neuman, MD; Robert A. Hart, MD; Douglas C. Burton, MD; International Spine Study Group

10:54–10:56 am  
Presentation #84  
Sagittal Alignment Parameters Associated with Adjacent Segment Pathology After Anterior Cervical Discectomy and Fusion  
Justin C. Paul, MD; Bryce A. Basques, MD; Philip K. Louie, MD; Arya Varthi, MD; Jonathan Markowitz, BS; Steve Heidt, BS; Sumender Sharma, MS; Edward J. Goldberg, MD; Howard S. An, MD

10:57–10:59 am  
Presentation #85  
Predictive Model for Achieving a Good Overall Outcome at One-Year Following Surgical Correction of Adult Cervical Deformity  
Peter G. Passias, MD; Cheongeun Oh, PhD; Samantha R. Horn, BA; Gregory W. Pooman, BA; Renaud Lafage, MS; Bassel Diebo, MD; Justin K. Scheer, MD; So Kato, MD; Hamed Reihani-Kermani, MD; Lauren Riehm, PhD; Michael G. Fehlings, MD, PhD

11:00–11:13 am  
Discussion

**MYELOPATHY III**

11:14–11:16 am  
Presentation #86  
The Relationship Between MRI Signal Intensity Changes, Clinical Presentation, and Surgical Outcome in Degenerative Cervical Myelopathy: Analysis of a Global Cohort  
Aria Nouri, MD, MSc; Allan Martin, MD; So Kato, MD; Hamed Reihani-Kermani, MD; Lauren Riehm, PhD; Michael G. Fehlings, MD, PhD

11:17–11:19 am  
Presentation #87  
Correlation of Radiographic Outcomes and Quality of Life for Multilevel Cervical Spondylotic Myelopathy  
Heath Patrick Gould, MD; Kelsey C. Goon, BS; Emily Hu, BA; Joseph Tanenbaum, BA; Colin Haines, MD; Don K. Moore, MD; Thomas E. Mroz, MD

11:20–11:22 am  
Presentation #88  
Brain Changes in Functional Connectivity and Anatomies in Patients with Cervical Myelopathy: A Resting-State Functional MRI Study  
Junichi Kushioka, MD; Takashi Kaito, MD, PhD; Shota Takenaka, MD, PhD; Takahiro Makino, MD, MSc; Yusuke Sakai; Hisashi Tanaka, MD; Yoshiyuki Watanabe, MD; Shigeyuki Kan, Masahiko Shibata, MD, PhD

11:23–11:25 am  
Presentation #89  
Monitoring for Myelopathic Progression with Multiparametric Quantitative MRI  
Allan R. Martin, MD; Benjamin De Leener; Julien Cohen-Adad; Sukhvinder Kalsi-Ryan; David W. Cadotte; Jefferson R. Wilson, FRCSC, MD, PhD; Lindsay Tetreault, BS, PhD; Aria Nouri, MD, MSc; Adrian Crawley; David J. Mikulis; Howard Ginsberg; Eric M. Massicotte, MD; Michael G. Fehlings, MD, PhD

11:26–11:28 am  
Presentation #90  
Brain Connectivity Can be a Novel Predictor for Neurological Improvement in Patients with Cervical Myelopathy  
Takashi Kaito, MD, PhD; Shota Takenaka, MD, DMSc; Takahiro Makino, MD, DMSc; Yusuke Sakai, MD; Junichi Kushioka, MD; Hisashi Tanaka, MD; Yoshiyuki Watanabe, MD, PhD; Shigeyuki Kan, PhD; Masahiko Shibata, MD

11:29–11:42 am  
Discussion

**COMPLICATIONS**

11:43–11:45 am  
Presentation #91  
Risk Factors for Inpatient Morbidity and Mortality After One- and Two-Level ACDF  
Ashley Rogerson, MD; Jessica Aidlen, MD; Andrew Mason, MS; Ayal Pierce, BS; David Tybor, PhD; Matthew Salzler, MD

11:46–11:48 am  
Presentation #92  
Bleeding vs. Clotting Complications After Cervical Spine Surgery: An Analysis of 207,794 Patients  
Haroutioun H. Boyajian, MD; Olumuyiwa A. Idowu, BA; William P. Mosenthal, MD; Edwin Ramos, MD; Lewis L. Shi, MD; Michael J. Lee, MD

11:49–11:51 am  
Presentation #93  
Does Screw Density Affect the Revision Rate of a Multilevel Posterior Cervical Decompression and Fusion  
Gregory D. Schroeder, MD; Christopher K. Kepler, MD, MBA; Kristen J. Nicholson, PhD; Mark F. Kurd, MD; Alan S. Hillbrand, MD; Loren Mead, BS; Brittany Moller, BS; Hamadi Murphy, MD; Barret I. Woods, MD; Kris E. Radcliff, MD; Jeffery A. Rihn, D. Greg Anderson, MD; Alexander R. Vaccaro, MD, PhD, MBA
11:52–11:54 am  Neurological Complications and Recovery Rates in Adult Cervical Deformity Surgery  
Han Jo Kim, MD; Hongda Bao, MD; Chris I. Shaffrey, MD; Justin Smith, MD; Michael P. Kelly, MD; Munish Gupta, MD; Todd J. Albert, MD; Themistocles S. Protopsaltis, MD; Gregory M. Mundis, MD; Peter G. Passias, MD; Eric Kleinberg, MD; Virginie Lafage, PhD; Christopher P. Ames, MD; International Spine Study Group

11:55–11:57 am  The Rothman Index as a Predictor of Post-Discharge Adverse Events After Elective Spine Surgery  
Ryan P. McLynn, BS; Jonathan J. Cui, BS; Nathaniel T. Ondeck, BS; David R. Swanson, MS; Blake N. Shultz, BA; Patawut Bovonratwet, BS; Jonathan N. Grauer, MD

11:58–12:11 pm  Discussion

12:10–12:13 pm  Closing Remarks  
Louis G. Jenis, MD

12:14 pm  Adjourning Notices  
Jeffrey C. Wang, MD