Forty-Ninth Annual Meeting

of the

CERVICAL SPINE RESEARCH SOCIETY

FOUNDED 1973

In-Person: Saturday, December 4, 2021
On-Demand: December 6, 2021 – January 31, 2022

President John M. Rhee, MD

Scientific Program Co-Chairs: Samuel K. Cho, MD • Steven C. Ludwig, MD

Abstract Review Committee: Alexander C. Ching, MD • Matthew W. Colman, MD
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Sergio A. Mendoza-Lattes, MD • Justin W. Miller, MD • Ahmad Nassr, MD
Daniel K. Park, MD • Jeffrey A. Rihn, MD • Carlo Santaguida, MD, FRCSC
Jason W. Savage, MD • Arjun S. Sebastian, MD, MSc • Brian W. Su, MD
Barrett I. Woods, MD • Elizabeth M. Yu, MD • John M. Rhee, MD

Scientific Meeting Objectives
• Present the results of current cervical spine research data.
• Promote discussion of new developments and techniques.
• Foster research concerning the diagnosis and treatment of cervical spine injury and disease.

No electronic devices of any kind may be used to record any portion of the Instrucional Course, Annual Meeting Scientific Program, E-Posters, Industry Workshops, or Technical Exhibits.

All times are listed in Eastern Time (ET).
Sessions marked with a 📹 icon are available on-demand December 6, 2021 – January 31, 2022.
Sessions marked with a 🔴 icon are available virtual-live on date and time listed in the session title.
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<tr>
<td>7:00am-9:00am</td>
<td>Atrium Lobby</td>
<td>Breakfast</td>
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<tr>
<td>7:00am-10:00am</td>
<td>Atrium Lobby</td>
<td>Registration Open</td>
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</table>
| 8:00am-8:56am | Atrium A     | Session 8 - Abstracts - Top Reviewed “Sweet Sixteen” Pt. II  
Moderator(s): Christopher Witiw, MD, MS; Timothy Moore, MD  

8:00am-8:10am  
CSRS Welcome  
Program Co-Chairs, Samuel K. Cho, MD; Steven C. Ludwig, MD  

8:10am-8:11am  
Introduction  
Christopher Witiw, MD, MS; Timothy Moore, MD  

8:11am-8:16am  
**SECOND PLACE CLINICAL RESEARCH AWARD**  
PRESENTATION #63  
Predictive Factors for the Aggravation of Cervical Alignment after Posterior Cervical Foraminotomy  
Hyung Rae Lee, MD  

8:16am-8:21am  
PRESENTATION #64  
Surgical Treatment of Single level Cervical Radiculopathy: A Comparison of Anterior Cervical Decompression and Fusion (ACDF) vs. Cervical Disc Arthroplasty (CDA) vs. Posterior Cervical Foraminotomy  
Kedar Padhye, MD  

8:21am-8:26am  
PRESENTATION #65  
Surgical and Radiographic Outcomes in Patients with High T1 and C2 Slopes  
Themistocles S. Protopsaltis, MD  

8:26am-8:31am  
**FIRST PLACE CLINICAL RESEARCH AWARD**  
PRESENTATION #66  
No Difference in Reoperation Rates in Posterior Cervical Fusions Stopping at C7 versus T1/T2 for Nonunions (Operative Nonunions): A cohort of 875 Patients - Part 2  
Jacob H. Fennessy, MD  

8:31am-8:36am  
**THIRD PLACE CLINICAL RESEARCH AWARD**  
PRESENTATION #67  
Racial Disparities in Patients Undergoing Anterior Cervical Discectomy and Fusion: A Multi-Site Study  
Comron Saifi, MD  

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8:36am-8:41am  PRESENTATION #68  
Stand-Alone Cages versus Cage and Plate Constructs for Primary One- and Two-level Anterior Cervical Discectomy and Fusion: A Prospective Randomized Controlled Trial  
Athan G. Zavras, BA  

8:41am-8:56am  Discussion  

Mobi-C® Cervical Disc

Statistically Superior in Overall Trial Success Compared to Fusion for Two-level Disc Replacement at Seven Years.  
Visit cervicaldisc.com for complete study results.
Saturday 12/4/2021

8:56am-9:31am  Atrium A

**Session 9: CSRS Past Research Grant Awards & Presentations**  
*Moderator(s): Wellington Hsu, MD*

- **8:56am-9:02am**  
  *Introduction and Recognition of 2021 Research Grant Award Winners*  
  Wellington Hsu, MD

- **9:02am-9:04am**  
  *The Role of Calcitonin Gene-Related Peptide in Intervertebral Disc Neurogenic Inflammation: A Potential Therapeutic Target for Discogenic Pain*  
  José Canseco, MD

- **9:04am-9:06am**  
  *Analysis of the Human Serum Proteome in Cervical Radiculopathy Patients to Predict Who Will Fail Conservative Treatment and Require Surgery*  
  Steven Pressciutti, MD

- **9:06am-9:08am**  
  *Discussion*

- **9:08am-9:10am**  
  *Morphological, Biochemical and Biomechanical Characterization of Human Cervical Endplate in Degenerated Disc*  
  Nathan Buchweitz, PhD Student

- **9:10am-9:12am**  
  *Discussion*

- **9:12am-9:14am**  
  *Is Vaporized Nicotine as Detrimental to Spinal Fusions as Cigarette Smoke?*  
  Jesse Bible, MD

- **9:14am-9:16am**  
  *Treatment of Spinal Cord Injury With Bone Marrow Mesenchymal Stem Cell Derived Exosomes*  
  Ankit Mehta, MD

- **9:16am-9:18am**  
  *A Multi-Disciplinary Approach to Reduce Chronic Opioid Use Prior to Elective Cervical Spine Surgery*  
  Andrew Pugely, MD

- **9:18am-9:20am**  
  *Quantitative Histomorphological Characterization of Human Cervical Nerve Roots to Determine the Relationship with Postoperative C5 Palsy*  
  P. Justin Tortolani, MD

- **9:20am-9:22am**  
  *Exploring Prognostic Brain Biomarkers for Cervical Myelopathy: A Resting-State Functional MRI Multicenter Study*  
  Takashi Kaito, MD, PhD

- **9:22am-9:24am**  
  *Randomized Trial of Opioid vs. Non-Opioid Postoperative Pain Regimens After Anterior Cervical Discectomy and Fusion*  
  Amir Abtahi, MD
Saturday, continued

9:24am-9:26am  3D Printed 2D Piezoelectric Materials to Deliver Stem Cells for Bone Repair and Regeneration  
Wellington Hsu, MD

9:26am-9:28am  Radiographic Evaluation of the Cervical Neck Surgical Approach and Its Relationship with BMI and Operative Characteristics Following ACDF.  
Michael Nolte, MD

9:28am-9:30am  Prediction of Admission Costs Following Anterior Cervical Discectomy and Fusion Utilizing Machine Learning  
Anirudh Gowd, MD

9:30am-9:31am  Discussion

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9:31am-9:41am  Atrium A

Presidential Farewell & Induction of New President

9:31am-9:36am  Passing of the Medallion
John Rhee, MD

9:36am-9:41am  Induction of New President
James Harrop, MD, FAANS

9:41am-9:56am  Atrium Lobby

Coffee Break

9:56am-10:56am  Atrium A

Symposia 5: Master Debate Series Pt. II
Moderator(s): Chris Shaffrey, MD; Michael Daubs, MD

9:56am-9:58am  Introduction
Chris Shaffrey, MD; Michael Daubs, MD

9:58am-10:07am  DEBATE - Traumatic Cervical Facet Fractures without Disclocation: I fix them
Erica Bisson, MD, MPH

10:07am-10:16am  DEBATE - Traumatic Cervical Facet Fractures without Disclocation: I put them in a collar
Addisu Mesfin, MD

10:16am-10:27am  Discussion

10:27am-10:36am  DEBATE - In an Awake, Alert, Cooperative Patient with a Cervical Disclocation: Closed Reduction Always and then OR
Carlo Bellabarba, MD

10:36am-10:45am  DEBATE - In an Awake, Alert, Cooperative Patient with a Cervical Disclocation: OR and Forget About the Closed Reduction
Vincent Traynelis, MD

10:45am-10:56am  Discussion

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10:56am-12:47pm  Atrium A

**Session 10: Abstracts - Motion Preservation; Trauma; Other**

*Moderator(s): Lee Riley, III, MD; Comron Saifi, MD*

- **10:56am-10:57am**
  - **Introduction**
  - *Lee Riley, III, MD; Comron Saifi, MD*

- **10:57am-11:02am**
  - **PRESENTATION #84**
  - The impact of anterior spondylolisthesis and kyphotic alignment on dynamic changes in spinal cord compression and neurological status in cervical spondylotic myelopathy: A radiological analysis involving kinematic CT myelography and
  - *Takuya Sakamoto, MD*

- **11:02am-11:07am**
  - **PRESENTATION #70**
  - Range of Motion on Flexion and Extension at Long-Term Follow-Up After Cervical Total Disc Arthroplasty: A Systematic Review and Meta-Analysis
  - *Athan G. Zavras, BA*

- **11:07am-11:12am**
  - **PRESENTATION #71**
  - Evaluation of Gait and Functional Stability in Preoperative Cervical Spondylotic Myelopathy Patients
  - *Hamid Hassanzadeh, MD*

- **11:12am-11:17am**
  - **PRESENTATION #72**
  - Skip laminoplasty as a novel posterior decompression technique to decrease interlaminar fusion and preserve cervical range of motion
  - *Jun Hee Lee, MD*

- **11:17am-11:22am**
  - **PRESENTATION #73**
  - Neuroimaging Biomarkers Correlate With Disease Severity In Degenerative Cervical Myelopathy
  - *Muhammad Ali Akbar, MD*

- **11:22am-11:27am**
  - **PRESENTATION #74**
  - Early Surgical Decompression Enhances Motor Recovery in Traumatic Cervical ASIA A Spinal Cord Injury Patients: Analysis of Prospective, Multicentre Data in 420 Cases
  - *Ali Moghaddamjou, MD*

- **11:27am-11:37am**
  - **Discussion**

- **11:37am-11:42am**
  - **PRESENTATION #75**
  - Internet Video-Based Patient Education on ACDF and CTDR: A Quantitative Analysis of Content and Quality
  - *Edward DelSole, MD*
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<th>Speakers</th>
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<tr>
<td>11:42am-11:47am</td>
<td>PRESENTATION #76</td>
<td>Risk Factors for MCID Drop-Off in Patients Undergoing Anterior Cervical Discectomy and Fusion</td>
<td>Conor P. Lynch, MS</td>
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<tr>
<td>11:47am-11:52am</td>
<td>PRESENTATION #77</td>
<td>Incidence of Noncontiguous Cervical Injury in Patients with Thoracic Spine Fractures</td>
<td>Patrick Curtin, MD</td>
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<td>11:52am-11:57am</td>
<td>PRESENTATION #78</td>
<td>International Validation of the AO Spine Subaxial Injury Classification System: The Importance of Methodology</td>
<td>Brian A. Karamian, MD</td>
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<tr>
<td>11:57am-12:02pm</td>
<td>PRESENTATION #79</td>
<td>Survival Rates in Atlanto-occipital Dissociation: A Look at the Past 20 Years</td>
<td>Gautham Prabhakar, MD</td>
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<td>12:02pm-12:12pm</td>
<td>Discussion</td>
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<tr>
<td>12:12pm-12:17pm</td>
<td>PRESENTATION #80</td>
<td>Radiological factors associated with the severity of corticospinal tract dysfunctions for cervical spondylotic myelopathy: An analysis of the central motor conduction time and kinematic CT myelography</td>
<td>Masahiro M. Funaba, MD</td>
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<tr>
<td>12:17pm-12:22pm</td>
<td>PRESENTATION #81</td>
<td>Enoxaparin promotes functional recovery after spinal cord injury by antagonizing PTPR sigma</td>
<td>Sadayuki Ito, MD</td>
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<td>12:22pm-12:27pm</td>
<td>PRESENTATION #82</td>
<td>Surgical outcome of cervical and thoracic extramedurally spinal tumor</td>
<td>Akinobu Suzuki, MD</td>
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<td>12:27pm-12:32pm</td>
<td>PRESENTATION #83</td>
<td>Laminectomy Alone versus Laminectomy with Fusion for Degenerative Cervical Myelopathy - a Long-term Study of a National Cohort</td>
<td>Eddie de Dios, MD</td>
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<td>12:32pm-12:47pm</td>
<td>Discussion</td>
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Close of meeting from CSRS Program Co-Chairs
Program Co-Chairs, Samuel K. Cho, MD; Steven C. Ludwig, MD

12:47pm-12:55pm Atrium A

E-Posters, E-Poster Awards, On-Demand Content

E-Posters

Full list of e-posters available online as well as in the Abstract Book.

E-Poster Awards

GENERAL E-POSTER AWARD
Automated detection of cervical spinal cord compression and the reliability of morphometric parameters extracted with the Spinal Cord Toolbox
Magda MH Horáková, MD

RESIDENT/FELLOW E-POSTER AWARD
Modified Kappa-line correlates better with neurological outcomes than modified K-line after laminoplasty for cervical myelopathy caused by ossification of the posterior longitudinal ligament
Seong Hun Song, MD

On-Demand Content
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