

CERVICAL SPINE RESEARCH SOCIETY



52ND ANNUAL MEETING & 29TH INSTRUCTIONAL COURSE FINAL PROGRAM



CHICAGO DEC 11-14, 2024
SHERATON GRAND CHICAGO RIVERWALK

President

Alpesh A. Patel, MD, MBA

Scientific Program Co-Chairs

Erica F. Bisson, MD, MPH; Jason W. Savage, MD; Barrett I. Woods, MD

Instructional Course Program Co-Chairs

Matthew W. Colman, MD; Barrett S. Boody, MD



DOWNLOAD THE CSRS ANNUAL MEETING MOBILE APP

The CSRS mobile meeting app provides you with access to the meeting schedule, event information, the Virtual Poster Hall, and exhibit booth locations.. You can also set up your account to communicate with attendees and receive meeting notifications!

Mobile App Download Instructions:



Download the App – Download the Eventsential app from the Apple App Store or Google Play Store.

Open your Email on your Mobile Device – Open the email sent on 12/9 with the subject line “CSRS 52nd Annual Meeting & 29th Instructional Course - Begin Your Experience with our Mobile App!”

Scroll & Select – Scroll to the bottom of the email and select “Get Started Now.”

Enter Event & Enjoy – The email link will take you back to the app and automatically log you in. You now have full access to all features in the event mobile app.

Update & Allow – Be sure to update your profile and allow push notifications to receive real time updates during the event.

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If you previously used this app for another CSRS event and are logged in under the old event, click on “More” on the bottom right of the screen. Select “Change Event” from the top left of the next screen. Select “CSRS 52nd Annual Meeting & 29th Instructional Course” to enter event. You will then need to login following the steps above.

If you previously used this app for another organization’s event, select “My Organizations” at the bottom of the event home screen. Search for “CSRS,” then select “CSRS 52nd Annual Meeting & 29th Instructional” to enter. You will then need to login following the steps above.

If you have difficulties logging into the CSRS event mobile app, please stop by the registration desk for assistance.



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FOUNDED 1973

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 Milwaukee, WI 53202
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www.csr.org
 Email: info@csr.org

No electronic devices of any kind may be used to record any portion of the Instructional Course, Annual Meeting Scientific Program, Virtual Poster Hall or Technical Exhibits.



WELCOME



I am excited to welcome you to the CSRS 52nd Annual Meeting, held at the Sheraton Grand Chicago Riverwalk in my hometown of Chicago, Illinois!

The meeting program co-chairs, Erica Bisson, MD, MPH; Jason Savage, MD; and Barrett Woods, MD have put together an amazing scientific program. We kick off the meeting with a special symposium on Wednesday afternoon, following the ICL, called The “Great Debates of 2024” that will feature past-presidents and field thought leaders. The scientific content features 70 of the 427 submitted abstracts received during our highly competitive submission process, ensuring that only the most novel, cutting-edge research is presented.

The Henry Bohlman Presidential Guest Lecture will be given by my friend, psychologist, Alison Fragale, PhD, on “The Psychology of Power.” She will provide deep insights into power, power dynamics, and how to be a better leader not only with our teams and patients, but with the people around us.

Beyond the General Session Room, you must take time to explore the city of Chicago! There is phenomenal food and restaurants, including 21 Michelin Rated restaurants that provide food for every taste. Chicago also has multiple professional sports teams, a beautiful theater district, and tons of shopping along Michigan Avenue. Your free Friday afternoon and evening can be filled networking with colleagues at one of the many tourist attractions or local traditions the city has to offer.

In addition to the Annual Meeting, the CSRS Instructional Course is celebrating its 29th year. Barrett Boody, MD and Matthew Colman, MD have put together a strong program – whether the session is focused on building a strong foundation on a complex topic, such as deformity or tumors, or debating controversies and complications in trauma or motion preservation, the ICL is sure to create lively discussion for both surgeons in training and the dedicated expert.

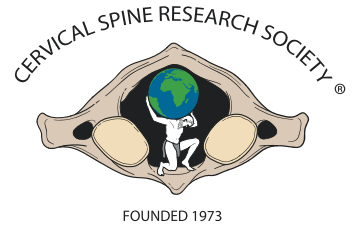
Once again, welcome to Chicago! I can't wait to see all that the 29th Instructional Course and 52nd Annual Meeting have in store!

Sincerely,

Alpesh Patel, MD, MBA
President, CSRS

ORIGINS OF THE SOCIETY

The Cervical Spine Research Society is an organization of individuals interested in clinical and research problems of the cervical spine. Its purpose is the exchange and development of ideas and philosophy regarding the diagnosis and treatment of cervical spine injury and disease.



The concept of a sub-specialty group devoted to the cervical spine was first considered in 1966. As interest in this area grew, a preliminary meeting to consider the formation of such an organization was held in Las Vegas, Nevada, in February, 1973, during the annual meeting of the American Academy of Orthopaedic Surgeons.

Present at the meeting were Edward H. Simmons and Ian McNab of Toronto; Richard Rothman and Henry H. Sherk of Philadelphia; Lee H. Riley, Jr. of Baltimore; Alice L. Garrett of West Haverstraw, New York; and Bernard Jacobs and J. William Fielding of New York City.

The name "Cervical Spine Research Society" was agreed upon and annual meetings were planned. The first such meeting was held in New York City in November, 1973. Since that time, yearly meetings have taken place at various locations within the North American continent.

Since the primary purpose of the organization is to carry out research and develop and exchange information on the cervical spine, international participation has been encouraged.

To provide a wide range of interest, it was felt that the composition of the membership should reflect the varying specialties and disciplines dealing with the cervical spine; biomechanical engineering, neurology, neurosurgery, radiology, orthopaedic surgery, and others. Qualifications for membership were to include demonstration of continued interest in the cervical spine and its related structures.

The organization has developed projects and has continued to grow. Current members are encouraged to seek out individuals, with appropriate interests, for membership to ensure the Society's future.

J. William Fielding, MD

MISSION STATEMENT

The Cervical Spine Research Society is a multidisciplinary organization that provides a forum for the exchange of ideas and promotes clinical and basic science research of the cervical spine. The organization values collegial interaction and strong scientific principles.

CSRS ALLIED ORGANIZATIONS



President: Jong-Beom Park, MD, PhD
15th Annual Meeting: March 19 - 25, 2025 - Seoul, Korea



CSRS Europe President: Carmen Vleggeert-Lankamp MD, MSc, PhD
40th Annual Meeting: May 14 - 16, 2025 - Prague, Czech Republic



2024 BOARD OF DIRECTORS AND COMMITTEE CHAIRS

CSRS BOARD OF DIRECTORS



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Alpesh A. Patel, MD, MBA



President Elect

Christopher Shaffrey, MD



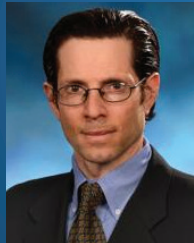
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Michael D. Daubs, MD



**Past President
Once Removed**

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MSHQS

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DEI Task Force

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Editor-in Chief, *Clinical Spine Surgery*

Gregory D. Schroeder, MD

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Neill M. Wright, MD

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Nominating

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Justin S. Smith, MD, PhD

Registry

Zoher Ghogawala, MD

Research

Samuel K. Cho, MD

Brandon D. Lawrence, MD

CSRS 29TH INSTRUCTIONAL COURSE SCHEDULE

Wednesday, December 11		Location
7:00 AM - 6:30 PM	Registration Open	Sheraton Ballroom Foyer - Level 4
7:00 AM - 8:30 AM	ICL Breakfast	Chicago Ballroom - Level 4
8:30 AM - 9:30 AM	ICL Session 1: Myelopathy	General Session - Level 4
9:30 AM - 10:30 AM	ICL Session 2: Trauma	General Session - Level 4
10:30 AM - 11:30 AM	ICL Session 3: Motion Preservation - Arthroplasty	General Session - Level 4
11:35 AM - 12:35 PM	ICL Lunch	Chicago Ballroom - Level 4
12:40 PM - 1:40 PM	ICL Session 4: Deformity	General Session - Level 4
1:40 PM - 2:40 PM	ICL Session 5: Tumor	General Session - Level 4
2:40 PM - 3:00 PM	ICL Break	Sheraton Ballroom Foyer - Level 4
3:00 PM - 4:00 PM	ICL Session 6: Controversies in Routine Practice	General Session - Level 4



CSRS 52ND ANNUAL MEETING SCHEDULE

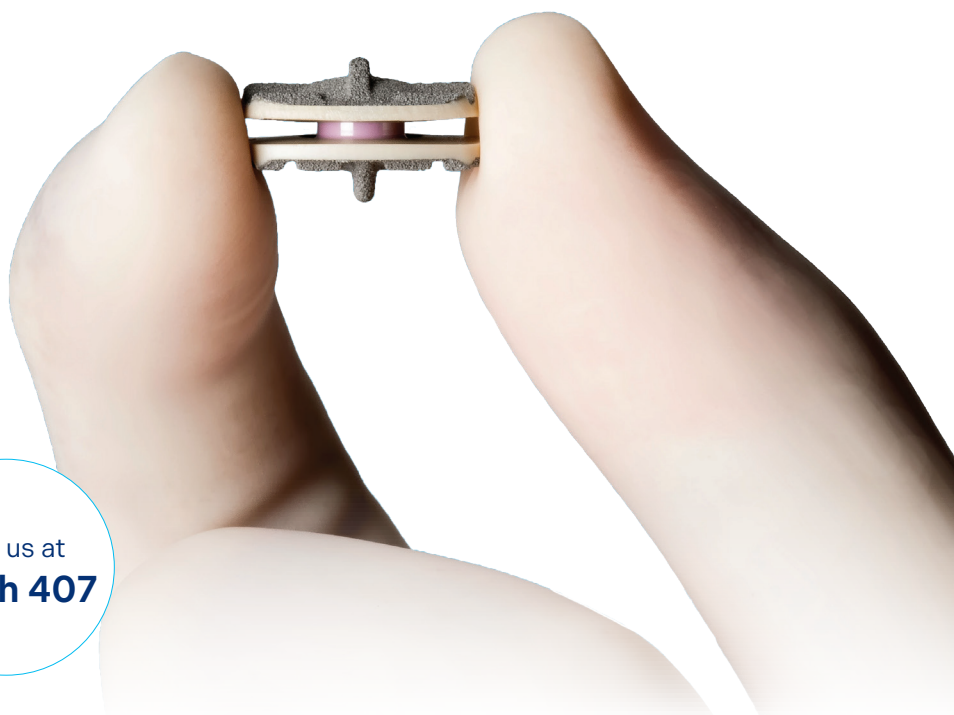
Wednesday, December 11		Location
7:00 AM - 6:30 PM	Registration Open	Sheraton Ballroom Foyer - Level 4
4:30 PM - 4:35 PM	Annual Meeting Welcome	General Session - Level 4
4:35 PM - 6:35 PM	Symposia 1: The "Great Debates of 2024"	General Session - Level 4
7:00 PM - 9:00 PM	CSRS Resident & Fellow Program and Dinner - Sponsored, in part, by Medtronic	Chicago Ballroom 8 - Level 4
Thursday, December 12		
7:00 AM - 5:30 PM	Registration Open	Sheraton Ballroom Foyer - Level 4
7:00 AM - 10:00 AM	Guest Lounge Open	Fountainview - Level 3
7:00 AM - 8:00 AM	Breakfast	Chicago Ballroom - Level 4
8:00 AM - 8:05 AM	Morning Welcome	General Session - Level 4
8:05 AM - 9:20 AM	Abstract Session 1: Outcomes I	General Session - Level 4
9:20 AM - 10:20 AM	Symposia 2: Paradigm Changes in Treating Cervical Spine Trauma Over the Years	General Session - Level 4
9:00 AM - 6:45 PM	Exhibit Hall Open	Exhibit Hall - Level 4
10:20 AM - 10:40 AM	Morning Coffee Break	Exhibit Hall - Level 4
10:40 AM - 11:55 AM	Abstract Session 2: Trauma	General Session - Level 4
12:00 PM - 12:55 PM	Industry Lunch Workshops	Industry Lunch Workshops - Level 2
1:05 PM - 2:20 PM	Abstract Session 3: Top 10	General Session - Level 4
2:20 PM - 2:50 PM	CSRS Allied Organization Presidential Talks & Meeting Previews	General Session - Level 4
2:50 PM - 3:15 PM	Afternoon Coffee Break	Exhibit Hall - Level 4
3:15 PM - 4:30 PM	Abstract Session 4: Motion Preservation	General Session - Level 4
4:30 PM - 5:30 PM	Henry H. Bohlman Presidential Guest Lecture	General Session - Level 4
5:30 PM - 6:45 PM	Annual Meeting Reception	Exhibit Hall - Level 4
7:00 PM - 9:00 PM	Industry Sponsored Dinner - Sponsored by Globus Medical	RSVP Required for Location Information

CSRS 52ND ANNUAL MEETING SCHEDULE

Friday, December 13		Location
7:00 AM - 12:30 PM	Registration Open	Sheraton Ballroom Foyer - Level 4
7:00 AM - 10:00 AM	Guest Lounge Open	Fountainview - Level 3
7:00 AM - 8:00 AM	Breakfast	Chicago Ballroom - Level 4
7:00 AM - 8:00 AM	CSRS Members' Business Meeting & Breakfast	Chicago Ballroom 8 - Level 4
8:00 AM - 8:05 AM	Morning Welcome	General Session - Level 4
8:05 AM - 9:20 AM	Abstract Session 5: Complications	General Session - Level 4
9:20 AM - 10:20 AM	Symposia 3: Critical Evaluation of Spine Surgery in 2024	General Session - Level 4
9:00 AM - 12:00 PM	Exhibit Hall Open	Exhibit Hall - Level 4
10:20 AM - 10:50 AM	Morning Coffee Break	Exhibit Hall - Level 4
10:50 AM - 12:05 PM	Abstract Session 6: Outcomes 2 & Deformity	General Session - Level 4
12:05 PM - 12:20 PM	Lifetime Achievement Award	General Session - Level 4
12:20 PM - 12:50 PM	CSRS Presidential Address	General Session - Level 4
12:50 PM	Afternoon Off	
1:00 PM - 2:00 PM	CSRS New Member Lunch - Invite Only	Fountainview - Level 3
Saturday, December 14		
7:00 AM - 9:30 AM	Registration Open	Sheraton Ballroom Foyer - Level 4
7:00 AM - 10:00 AM	Guest Lounge Open	Fountainview - Level 3
7:00 AM - 8:00 AM	Breakfast	Chicago Ballroom - Level 4
8:00 AM - 8:10 AM	Morning Welcome & New Member Recognition	General Session - Level 4
8:10 AM - 8:15 AM	CSRS 2025 Meeting Preview	General Session - Level 4
8:15 AM - 9:15 AM	2024 Research Grant Awards & Past Research Grant Presentations	General Session - Level 4
9:15 AM - 9:30 AM	Awards Session: Abstract Awards & Scholarship Recipients	General Session - Level 4
9:30 AM - 9:40 AM	2025 CSRS Presidential Induction Ceremony	General Session - Level 4
9:40 AM - 10:40 AM	Symposia 4: Controversies in Posterior Cervical Surgery	General Session - Level 4
10:40 AM - 11:55 AM	Abstract Session 7: Fun Facts	General Session - Level 4
11:55 AM - 12:00 PM	Annual Meeting Farewell	General Session - Level 4

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29TH

TWENTY-NINTH INSTRUCTIONAL COURSE

of the



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DECEMBER 11, 2024

SHERATON GRAND CHICAGO RIVERWALK - CHICAGO, ILLINOIS

President: Alpesh A. Patel, MD, MBA

Instructional Course Program Co-Chairs: Barrett S. Boody, MD; Matthew W. Colman, MD

Instructional Course Sub-Committee: Sohaib Hashmi, MD · Amit Jain, MD, MBA · Ankit I. Mehta, MD
Tim A. Moore, MD · P. Bradley Segebarth, MD · Adam L. Shimer, MD · Douglas Weinberg, MD

Course Objectives

- Review appropriate anatomy of the cervical spine.
- Compare the methods for diagnosis of neck disorders.
- Evaluate operative and non-operative treatment options for cervical spine disorders.
- Recognize and respond to complications of surgical treatment.
- Exchange information on cervical spine research, diagnosis and treatment with both US and international surgeons.

No electronic devices of any kind may be used to record any portion of the Instructional Course, Annual Meeting Scientific Program, Virtual Poster Hall, Industry Workshops, or Technical Exhibits.



WEDNESDAY, DECEMBER 11, 2024

Registration Open

Time: 7:00 AM - 6:30 PM
Location: Sheraton Ballroom Foyer - Level 4

ICL Breakfast (for ICL registered attendees)

Time: 7:00 AM - 8:30 AM
Location: Chicago Ballroom – Level 4

ICL Session 1: Myelopathy

Time: 8:30 AM - 9:30 AM
Location: General Session - Level 4
Moderators: Sohaib Hashmi, MD; Brad Segebarth, MD
 8:30 AM **Fundamentals: State of the Art Imaging, Exam, and PROs**
 Brandon D. Lawrence, MD

8:40 AM **Management of Asymptomatic Cord Compression and Mild/Moderate Clinical Myelopathy**
 Michael G. Fehlings, MD, PhD

8:46 AM **Laminoplasty Technique Video + Pearls**
 John G. Heller, MD

8:50 AM **Neurologic Complications and How to Manage Them**
 John M. Rhee, MD

8:56 AM **Case Debates**

9:20 AM **Discussion**

ICL Session 2: Trauma

Time: 9:30 AM - 10:30 AM
Location: General Session - Level 4
Moderators: Sohaib Hashmi, MD; Tim Moore, MD; Brad Segebarth, MD

9:30 AM **Fundamentals: Staying Out of Trouble With the Most Common Fractures**
 John C. France, MD

9:38 AM **Managing Complex Scenarios With Multiple Fractures: Approaches and Prioritization**
 William R. Spiker, MD

Clinical Spine Surgery Specialty Issue on Trauma
 9:46 AM **Controversies in the Management of Type II Odontoid Fractures**
 John K. Houten, MD

9:52 AM **Review of Traumatic Cervical Facet Fracture & Dislocations**
 Andrew T. Dailey, MD

9:58 AM **Return to Play After Injuries to the Cervical Spine**
 Sheeraz A. Qureshi, MD, MBA

10:04 AM **Case Debates**

10:24 AM **Discussion**

WEDNESDAY, DECEMBER 11, 2024

ICL Session 3: Motion Preservation – Arthroplasty

<i>Time:</i>	10:30 AM - 11:30 AM
<i>Location:</i>	General Session - Level 4
<i>Moderators:</i>	Ankit I. Mehta, MD; Adam L. Shimer, MD; Douglas Weinberg, MD
10:30 AM	Basics of TDA: Current Design Options, Biomechanics, Techniques Rick C. Sasso, MD
10:40 AM	Beyond the IDE Indications: Evolving Use Hyun Bae, MD
10:46 AM	Current Controversies in Cervical Arthroplasty Wilson Z. Ray, MD
10:52 AM	Failure and Complications in Cervical Arthroplasty Frank Phillips, MD
10:58 AM	Case Debates
11:14 AM	Discussion

ICL Lunch (for ICL registered attendees)

<i>Time:</i>	11:35 AM - 12:35 PM
<i>Location:</i>	Chicago Ballroom – Level 4

ICL Session 4: Deformity

<i>Time:</i>	12:40 PM - 1:40 PM
<i>Location:</i>	General Session - Level 4
<i>Moderators:</i>	Amit Jain, MD; Adam L. Shimer, MD
12:40 PM	Cervical Alignment Parameters: What Really Matters Adam L. Shimer, MD
12:48 PM	Algorithm for Treatment of Cervical Deformity Sang Hun Lee, MD
12:56 PM	UIV/LIV Selection Han Jo Kim, MD
1:04 PM	Correction Techniques in Severe Deformity Christopher P. Ames, MD
1:12 PM	Case Debates
1:28 PM	Discussion



WEDNESDAY, DECEMBER 11, 2024

ICL Session 5: Tumor

<i>Time:</i>	1:40 PM - 2:40 PM
<i>Location:</i>	General Session - Level 4
<i>Moderators:</i>	Matthew W. Colman, MD; Ankit I. Mehta, MD
1:40 PM	Modern Management of Cervical Metastases Daniel M. Sciubba, MD
1:52 PM	Primary Benign Bone Tumor Review Matthew L. Goodwin, MD, PhD
2:00 PM	Tumor Mimics Every Spine Surgeon Should Know and How to Spot Them Matthew W. Colman, MD
2:08 PM	Intradural Tumors for Dummies Ziya L. Gokaslan, MD
2:16 PM	Cervical Corpectomy - Master Technique Jean-Paul Wolinsky, MD
2:20 PM	Case Debates
2:36 PM	Discussion

ICL Break

<i>Time:</i>	2:40 PM - 3:00 PM
<i>Location:</i>	Sheraton Ballroom Foyer - Level 4

ICL Session 6: Controversies in Routine Practice

<i>Time:</i>	3:00 PM - 4:00 PM
<i>Location:</i>	General Session - Level 4
<i>Moderators:</i>	Barrett S. Boody, MD; Matthew W. Colman, MD; Amit Jain, MD; Tim A. Moore, MD
3:00 PM	Case Presentation Barrett S. Boody, MD; Matthew W. Colman, MD
Debate 1: Drains	
3:03 PM	Spine Surgery is “Drain Surgery” and They Should be Used Regularly Wilson Z. Ray, MD
3:09 PM	Not Only Are They Not Helpful But They Can Cause Harm Wellington K. Hsu, MD
3:15 PM	Discussion
Debate 2: Neuromonitoring	
3:22 PM	It’s a Standard of Clinical and Medicolegal Care Darrel S. Brodke, MD
3:28 PM	It’s Value is Questionable and Can Put the Surgeon and Patient at Risk Rod J. Oskouian, MD
3:34 PM	Discussion
Debate 3: Operative Setting	
3:41 PM	Multi-level ACDf is an Outpatient Surgery Jason W. Savage, MD
3:47 PM	Multi-level ACDf Requires an Overnight Stay Gregory D. Schroeder, MD
3:53 PM	Discussion

52ND

FIFTY-SECOND ANNUAL MEETING

of the



FOUNDED 1973

DECEMBER 11 - 14, 2024

SHERATON GRAND CHICAGO RIVERWALK - CHICAGO, ILLINOIS

President: Alpesh A. Patel, MD, MBA

Scientific Program Co-Chairs: Erica F. Bisson, MD, MPH • Jason W. Savage, MD • Barrett I. Woods, MD

Abstract Review Sub-committee: Nitin Agarwal, MD • J. Taylor Bellamy, MD • Andrew Z. Blankenship, DO • Barrett S. Boody, MD • Wesley Harris Bronson, MD, MS • Landon R. Bulloch, MD • Alexander J. Butler, MD • Chad E. Campion, MD • Bayard C. Carlson, MD • Andrew K. Chan, MD • Saad B. Chaudhary, MD • John Clohisy, MD • Jerry Y. Du, MD • Jacob H. Fennesy, MD • Laviel Adrian Fernandez, MD • Ricardo J. Fernandez-de Thomas, MD • Craig W. Forsthoefel, MD • Donald R. Fredericks, Jr., MD • Erik Gerlach, MD • Varan Haghsheenas, MD • Sohaib Hashmi, MD • Jae Taek Hong, MD, PhD • Andrew S. Jack, MD, MSc • Amit Jain, MD, MBA • Brian A. Karamian, MD • Jun Sup Kim, MD • Jeffery A. Konopka, MD • Jun Ho Lee, MD PhD • Taryn E. LeRoy, MD • Hannah A. Levy, MD • Harry M. Lightsey, IV, MD • Stephen D. Lockey, MD • Philip K. Louie, MD • Julian G. Lugo-Pico, MD • Marcus D. Mazur, MD • David Mazur-Hart, MD • Michael H. McCarthy, MD, MPH • Ankit I. Mehta, MD • Andrew H. Milby, MD • Benjamin Mueller, MD, PhD • Brian J. Neuman, MD • Christopher P. O'Boynick, MD • Catherine Olinger, MD • Samuel C. Overlay, MD • Kedar Padhye, MD • Alpesh A. Patel, MD, MBA • Guilherme Bastos Ferreira Porto, MD • Srinivas Prasad, MD, MS • Micheal Sang Hun Raad, MD • Won Hyung A. Ryu, MD • Alexander M. Satin, MD • Jason W. Savage, MD • Saman Shabani, MD • Jeremy D. Shaw, MD, MS • Hardeep Singh, MD • Sonal Sodha, MD • Alexander Spiessberger, MD • Byron F. Stephens, MD • Benjamin D. Streufert, MD • Sanjeev J. Suratwala, MD, MBA • Lee Tan, MD • Sohrab Virk, MD • Carmen LA Vleggeert-Lankamp, MD, MSc, PhD • John V. Wainwright, MD • Douglas Weinberg, MD • Joseph A. Weiner, MD • Barrett I. Woods, MD • Emily M. Zielinski, MD • Chason Ziino, MD • Corinna C. Zygourakis, 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 Instructional Course, Annual Meeting Scientific Program, Virtual Poster Hall, Industry Workshops, or Technical Exhibits.



WEDNESDAY, DECEMBER 11, 2024

Registration Open

Time: 7:00 AM - 6:30 PM
Location: Sheraton Ballroom Foyer - Level 4

Annual Meeting Welcome

Time: 4:30 PM - 4:35 PM
Location: General Session - Level 4
Moderator: Alpesh A. Patel, MD, MBA

Annual Meeting Opening Symposia: The “Great Debates of 2024”

Time: 4:35 PM - 6:35 PM
Location: General Session - Level 4
Moderators: Erica F. Bisson, MD, MPH; Alpesh A. Patel, MD, MBA; Jason W. Savage, MD; Barrett I. Woods, MD

Debate 1: Novel Technology Debate in Motion Preservation - Role of the Surgeon in Validating, Adapting, Integrating New Technology

4:35 PM **Introduction & Case Presentation**
 Alpesh A. Patel, MD, MBA

4:39 PM **Late Technology Adopter**
 Rick C. Sasso, MD

4:47 PM **Early Technology Adopter**
 Thomas E. Mroz, MD

4:55 PM **Discussion**

Debate 2: Collar Immobilization after Cervical Spine Surgery – Yes or No?

5:05 PM **Introduction & Case Presentation**
 Barrett I. Woods, MD

5:09 PM **Yes, Use a Collar**
 John M. Rhee, MD

5:17 PM **No, Don't Use a Collar**
 Praveen V. Mummaneni, MD

5:25 PM **Discussion**

Debate 3: Acute Central Cord Injury Debate – Ultra Acute (<8 hrs) vs. Delayed (>8 hrs)

5:35 PM **Introduction & Case Presentation**
 Erica F. Bisson, MD, MPH

5:39 PM **Delayed Treatment Is Best**
 James S. Harrop, MD, MSHQS

5:47 PM **Ultra Acute Treatment Is Best**
 Gregory Schroeder, MD

5:55 PM **Discussion**

Debate 4: Cervical Corpectomy Interbody Debate – Structural Allograft vs. Cage

6:05 PM **Introduction & Case Presentation**
 Jason W. Savage, MD

6:09 PM **Structural Allograft is Best**
 Paul A. Anderson, MD

6:17 PM **Cage Is Best**
 Wellington Hsu, MD

6:25 PM **Discussion**

WEDNESDAY, DECEMBER 11, 2024

CSRS Resident & Fellow Program and Dinner - Sponsored, in part, by Medtronic (Invite Only & RSVP Required)

Time: 7:00 PM - 9:00 PM

Location: Chicago Ballroom 8 - Level 4

Juggling the Journey of Life as a Spine Surgeon: Managing Stress, Negotiating Contracts, and Involvement in Academia

Philip K. Louie, MD; Venu M. Nemani, MD, PhD; Michael Y. Wang, MD, MBA



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THURSDAY, DECEMBER 12, 2024

Breakfast

Time: 7:00 AM - 8:00 AM
Location: Chicago Ballroom - Level 4

Guest Lounge Open

Time: 7:00 AM - 10:00 AM
Location: Fountainview - Level 3

Registration Open

Time: 7:00 AM - 5:30 PM
Location: Sheraton Ballroom Foyer - Level 4

Morning Welcome

Time: 8:00 AM - 8:05 AM
Location: General Session - Level 4
Moderators: Erica F. Bisson, MD, MPH; Jason W. Savage, MD; Barrett I. Woods, MD



Surgical insights: addressing complex cervical cases

Thursday, December 12, 2024 | 12:00 p.m.
Location: **Ontario**

Engage in a panel discussion focused on the intricate approaches to develop surgical strategies for complex cervical cases. Join our moderator, Dr. Nauman Chaudhry, as he guides an immersive conversation featuring expert insights from Dr. Jason Savage and Dr. Haariss Ilyas.

Nauman Chaudhry, MD
Orlando Health
Neuroscience Institute
Orlando, FL



Haariss Ilyas, MD
Baylor Scott and White Health
Mansfield, TX



Jason Savage, MD
Cleveland Clinic
Cleveland, OH



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The information presented is intended to demonstrate the breadth of Stryker product offerings. A surgeon must always refer to the package insert, product label and/or instructions for use before using any Stryker product. Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets. Please contact your Stryker representative if you have questions about the availability of Stryker products in your area.

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THURSDAY, DECEMBER 12, 2024

Abstract Session 1: Outcomes 1

<i>Time:</i>	8:05 AM - 9:20 AM
<i>Location:</i>	General Session - Level 4
<i>Moderators:</i>	Alpesh A. Patel, MD, MBA; Michael Daubs, MD
8:05 AM	Introduction
8:10 AM	1. Postoperative Improvement in Neck Pain Following Decompression Without Fusion in Patients with Cervical Myelopathy Hiroyuki Nakarai, MD
8:15 AM	2. What Predicts Attainment of Substantial Clinical Benefit in Neck Pain-Related Disability 24 Months after Surgery for Cervical Spondylotic Myelopathy? Harrison J. Howell, BA
8:20 AM	3. Could Indirect Decompression Occur for Cord Compression by Ligamentum Flavum with Anterior Cervical Discectomy and Fusion? Sehan Park, MD, PhD
8:25 AM	4. Residual Anterior Compression on Postoperative MRI After Laminoplasty for Multilevel Degenerative Cervical Myelopathy Liang Jiang, MD
8:30 AM	5. Patients With and Without Severe Systemic Illness, Measured by ASA Grade, Benefit from Surgery for CSM: A Report from the Quality Outcomes Database Vardhaan S. Ambati, BS
8:35 AM	Discussion
8:45 AM	6. Re-analysis of the CSM-PROTECT Multicentre Randomized Controlled Trial Reveals a Global Treatment Benefit of Riluzole in Patients Undergoing Surgery for Degenerative Cervical Myelopathy Michael G. Fehlings, MD, PhD
8:50 AM	7. Degenerative Cervical Myelopathy Patients' Six-month and Twelve-month Outcomes: Follow-up Analysis from the MYelopathy NATural History (MYNAH) Registry Nashwa Najib, MD
8:55 AM	8. Temporal Trends of Improvement in Patients With Cervical Spondylotic Myelopathy After Anterior Cervical Discectomy and Fusion Chad Z. Simon, BS
9:00 AM	9. Who Gets Better after Surgery for Degenerative Cervical Myelopathy? A Responder Analysis from the Multicenter Canadian Spine Outcomes and Research Network Husain Shakil, MD
9:05 AM	10. Comparative Analysis of Patient-Reported Outcomes in Myelopathy and Myeloradiculopathy: A Quality Outcomes Database Study Ken Porche, MD
9:10 AM	Discussion

Exhibit Hall Open

<i>Time:</i>	9:00 AM - 6:45 PM
<i>Location:</i>	Exhibit Hall - Level 4



THURSDAY, DECEMBER 12, 2024

Symposia 2: Paradigm Changes in Treating Cervical Spine Trauma Over the Years

<i>Time:</i>	9:20 AM - 10:20 AM
<i>Location:</i>	General Session - Level 4
<i>Moderators:</i>	Erica F. Bisson, MD, MPH; Brandon D. Lawrence, MD
9:20 AM	Neuroprotective Strategies... Does Anything Really Help? Brian K. Kwon, MD, PhD
9:30 AM	Spinal Cord Stimulation Developments Maxwell Boakye, MD
9:40 AM	Management of Facet Fractures/Dislocations Steven C. Ludwig, MD
9:50 AM	ORIF of Upper Cervical Spine Fractures Tim A. Moore, MD
10:00AM	Tips and Tricks for Achieving Fixation in Osteoporotic Fractures John C. France, MD
10:10 AM	Discussion

Morning Coffee Break

<i>Time:</i>	10:20 AM - 10:40 AM
<i>Location:</i>	Exhibit Hall - Level 4

JOIN THE HIGHRIDGE WORKSHOP

Not Another Cervical Deformity Talk: Tips and Tricks for Complex Posterior Cervical Cases

Thursday, Dec. 12 - 12:00 - 12:55 p.m. - Erie Room

FACULTY:



Woosik Chung, MD



Neill Wright, MD



THURSDAY, DECEMBER 12, 2024

Abstract Session 2: Trauma

- Time:* 10:40 AM - 11:55 AM
Location: General Session - Level 4
Moderators: Gregory Schroeder, MD; Jefferson R. Wilson, MD, PhD
- 10:40 AM **CSRS Publications Committee and Journal Overview**
Gregory Schroeder, MD
- 10:44 AM **Introduction**
- 10:45 AM **11. Surgical Versus Conservative Treatment for Odontoid Fractures in the Elderly: An International Prospective Comparative Study**
Jeroen GJ. Huybregts, MD
- 10:50 AM **12. Profiling of Cerebrospinal Fluid and Blood EVs-miRNAs for Predicting Natural Recovery from Acute Spinal Cord Injury in Rat Models**
Tomoharu T. Tanaka, MD/PhD student
- 10:55 AM **13. Comparative Analysis of ACDF and PCDF for Traumatic Cervical Facet Fractures/Dislocations: 90-Day Medical Complications, Surgical Outcomes, and Trends Over the Last Decade**
Andrew S. Zhang, MD
- 11:00 AM **14. Simultaneous Fractures of the Atlas and Axis: Presentation, Management, and Outcomes of a Series of 103 Consecutive Patients**
Michael B. Cloney, MD, MPH
- 11:05 AM **15. Comparison of Treatment Modalities Managing Odontoid Fractures: An Analysis of Timing and Fracture Morphology**
Anirudh K. Gowd, MD
- 11:10 AM **Discussion**
- 11:20 AM **16. Technique Note of a Three-dimensional Reduction Method with a Modified C2 Isthmus Screw in Irreducible Atlantoaxial Dislocation**
Bo Yuan, MD
- 11:25 AM **17. What Facilitates Successful Reduction with Closed Skeletal Traction for Unilateral Locked Subaxial Cervical Facet and What Operative Approach is Superior When Closed Reduction Fails: Anterior or Posterior?**
Timothy Chryssikos, MD, PhD
- 11:30 AM **18. Bone Density Measurements Show No Significant Association with Presence of Dens Fractures: Case-Control Study Using Opportunistic CT Osteoporosis Indices**
Andrew Sauer, BA
- 11:35 AM **19. Development of a Web Application for Predicting Neurological Outcome at Hospital Discharge in Spinal Cord Injury Patients: A Machine Learning Approach**
Kyota Kitagawa, MD
- 11:40 AM **20. Type 2 Odontoid Fractures: Atlantodental Arthrosis as a Novel Risk Factor for Failure of Conservative Management**
Taylor Paziuk, MD
- 11:45 AM **Discussion**



THURSDAY, DECEMBER 12, 2024

Industry Lunch Workshops

Time: 12:00 PM - 12:55 PM

Location: Meeting Rooms on Level 2

Please note: Each industry lunch workshop is limited to the first 40 individuals that arrive.

ATEC Spine

Techniques for Improving Operative Outcomes in the Cervical Spine

Speakers: Steven C. Ludwig, MD; Hani Malone, MD, Sohaib Hashmi, MD

Location: Superior A – Level 2

Case review and discussion on segmental plating, deformity, and trauma surgery.

Cerapedics

Bone Graft Selection in High-Risk Patients: What Does the Literature Say?

Speaker: Peter Passias, MD

Location: Superior B – Level 2

Join us for a presentation advocating evidence-based graft-first decision making for patients at high risk of non-union. We'll examine meta-analysis data highlighting elevated risks and costs associated with spinal fusion in high-risk patients and delve into Level I studies to explore patient inclusion, regulatory pathways, product variation, and safety, providing insights to better inform clinical decisions and improve patient outcomes.

Johnson & Johnson MedTech

Pursuit of Value in Cervical Spine Care

Speakers: Amit Jain, MD, MBA; Safdar N. Khan, MD; Philip K. Louie, MD

Location: Huron – Level 2

This symposium uses a case-based format to delve into controversial areas within cervical spine surgery, prompting discussion on how to achieve the best value for patients. Expert speakers will present a variety of cases, highlighting the complexities of decision-making and the pursuit of optimal outcomes.

Globus Medical

Enhancing cTDR: Simplify's Role in Helping to Advance MRI Visualization and Clinical Excellence

Speakers: Hyun Bae, MD; K. Daniel Riew, MD; Jad G. Khalil, MD

Location: Michigan B – Level 2

Discover cutting-edge cTDR technology as surgeon experts discuss Simplify's impressive clinical success rate for cervical disc reconstruction at one and two levels. Its unique design that is focused on anatomical height, natural motion preservation, and clear post-operative visualization with MRI will be highlighted. Topics will also include FDA-approved indications, patient selection, evidence from the clinical trials and workflow via case-based discussions.

Highridge Medical

Not Another Cervical Deformity Talk - Tips and Tricks for Complex Posterior Cervical Cases

Speakers: Woosik M. Chung, MD; Neill M. Wright, MD

Location: Erie – Level 2

This interactive session delivers practical tips for managing complex posterior cervical cases, equipping surgeons with effective strategies for improved patient outcomes. Discussion features Highridge's Virage® Posterior Cervical System.

THURSDAY, DECEMBER 12, 2024

Industry Lunch Workshops, continued**Medtronic****Advancements in Complex Cervical deformity utilizing AiBLE and Advanced Materials***Moderator:* Christopher I. Shaffrey, MD*Speakers:* Charles H. Crawford, III, MD; Lee Tan, MD*Location:* Michigan A – Level 2**Stryker****Surgical Insights: Addressing Complex Cervical Cases***Moderator:* Nauman Chaudhry, MD*Speakers:* Haariss Ilyas, MD, Jason W. Savage, MD*Location:* Ontario – Level 2

Engage in a panel discussion focused on the intricate approaches to develop surgical strategies for complex cervical cases. Join our moderator, Dr. Nauman Chaudhry, as he guides an immersive conversation featuring expert insights from Dr. Jason Savage and Dr. Haariss Ilyas.

CSRS 2025 CALL FOR ABSTRACTS

**MARCH 1 THROUGH
APRIL 15, 2025**



FOR MORE INFORMATION
visit [csr.org](https://www.csr.org)



**53rd Annual Meeting &
30th Instructional Course
December 3 - 6, 2025**





THURSDAY, DECEMBER 12, 2024

Abstract Session 3: Top 10

Time: 1:05 PM - 2:20 PM

Location: General Session - Level 4

Moderators: Andrew Dailey, MD; Samuel C. Overley, MD

1:05 PM

Introduction

1:10 PM

21. Anterior Compared to Posterior Surgery for Degenerative Cervical Myelopathy: A Cost-Utility Analysis from the Multicenter Canadian Spine Outcomes and Research Network

Husain Shakil, MD

1:15 PM

22. Therapeutic Efficacy of Clinically Relevant Human iPSC-derived Neural Stem/Progenitor Cell Transplantation for Chronic Cervical Spinal Cord Injury

Ryo Ogaki, MD

1:20 PM

23. Spinal Cord Metrics Derived from Diffusion-weighted MRI Improves Prognostication in Cervical Spondylotic Myelopathy Compared to Conventional MRI

Justin Zhang, MD

1:25 PM

24. Association of Pre-injury Depression History with Functional Independence After Spinal Cord Injury

Braeden Benedict, MD

1:30 PM

25. Outcomes of Non-Union Type 2 Odontoid Fractures – A Multi-Institutional Study

Benjamin Johnston, MD, PhD

1:35 PM

Discussion

1:45 PM

26. Therapeutic Effects of Combined Therapy Involving Scar Resection, Decellularized Scaffold, and Human Induced Pluripotent Stem Cell-derived-neural Stem/Progenitor Cells Transplantation in Chronic Complete SCI

Keitaro Ito, MD

1:50 PM

27. Evaluating Incidence and Predictors of Postoperative Dysphagia Following Cervical Surgery Using EAT-10: A Multi-institutional Study

Ken Porche, MD

1:55 PM

28. Incidence, Risk Factors and Long-term Consequence of Neurological Complication and Symptom Worsening After Surgery for Degenerative Cervical Myelopathy (DCM): Evidence for a Protective Effect of the Sodium-Glutamate Antagonist Riluzole

Karlo Pedro, MD

2:00 PM

29. Trends in Cervical Laminoplasty Incidence and Reimbursement in the United States from 2009-2019

Prashant V. Rajan, MD

2:05 PM

30. Are Postoperative Neck Pain and Kyphotic Change After Laminoplasty Affected by Degree of Facet Joint Degeneration?

San Kim, MD

2:10 PM

Discussion

THURSDAY, DECEMBER 12, 2024

CSRS Allied Organization Presidential Talks & Meeting Previews

<i>Time:</i>	2:20 PM - 2:50 PM
<i>Location:</i>	General Session - Level 4
<i>Moderator:</i>	James S. Harrop, MD, MSHQS
2:20 PM	Is Inflammation an Important Factor in Radiculopathy: The Role of Macrophages Carmen Vleggeert-Lankamp, MD, MSc, PhD
2:30 PM	CSRS-Europe 2025 Annual Meeting Preview Carmen Vleggeert-Lankamp, MD, MSc, PhD
2:35 PM	Revision Surgery for Failure of Cervical Disc Arthroplasty at Index and Adjacent Levels Jong-Beom Park, MD, PhD
2:45 PM	CSRS-Asia Pacific 2025 Annual Meeting Preview Jong-Beom Park, MD, PhD

Afternoon Coffee Break

<i>Time:</i>	2:50 PM - 3:15 PM
<i>Location:</i>	Exhibit Hall - Level 4

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THURSDAY, DECEMBER 12, 2024

Abstract Session 4: Motion Preservation

<i>Time:</i>	3:15 PM - 4:30 PM
<i>Location:</i>	General Session - Level 4
<i>Moderators:</i>	Michael H. McCarthy, MD, MPH; Neill M. Wright, MD
3:15 PM	CSRS Education Committee Overview & Introduction Michael H. McCarthy, MD, MPH; Neill M. Wright, MD
3:20 PM	31. Pre- and Intraoperative Factors Associated with Improvement of Neck Pain after Laminoplasty for the Treatment of Cervical Myelopathy Arnold Joseph Cagulada, MD, FPOA
3:25 PM	32. Efficacy of Laminectomy and Fusion Versus Laminoplasty for the Treatment of K-line Negative Cervical Ossification of the Posterior Longitudinal Ligament San Kim, MD
3:30 PM	33. Open-door Cervical Laminoplasty with Skip-fixation Can Be Considered as a Cost-effective Procedure: 2-year Outcomes of a Multicenter Randomized Controlled Trial Koji Tamai, MD, PhD
3:35 PM	34. Evaluation of Radiographically Relevant Heterotopic Ossification Following One-Level Cervical Disc Arthroplasty with a PEEK-on-Ceramic Artificial Disc Andrew Park, MD
3:40 PM	35. Impact of CDR and ACDF on the Global Spinal Alignment in Degenerative Spinal Disorder Tomoyuki Asada, MD, PhD
3:45 PM	Discussion
3:55 PM	36. Influence of Cervical Disc Prosthesis Design and 1- Versus 2-level Disc Replacements on ROM Outcomes 2-year Post Disc Arthroplasty in 835 Patients from 4 US IDE Clinical Trials Avinash G. Patwardhan, PhD
4:00 PM	37. Surgeons' Views on Cervical Disc Arthroplasty for Elite Athletes: A Survey of Cervical Spine Research Society Members Alexander M. Satin, MD
4:05 PM	38. Does Baseline Severity of Arm Pain Affect PROMIS Scores Following Cervical Disc Replacement? Gregory A. Snigur, MS
4:10 PM	39. Cervical Disc Replacement Can Improve Neck Pain Similarly to Anterior Cervical Discectomy and Fusion in Patients with Prominent Neck Pain: Propensity Score Matching Analysis with Overlap Weighting Tomoyuki Asada, MD, PhD
4:15 PM	40. Disc to Disc: Early Results of the Multi-center, Prospective, Randomized Clinical Investigational Device Exemption Trial Comparing a Novel Total Disc Replacement (TDR) to an Approved TDR Control at Two Contiguous Levels of the Cervical Spine Jad Khalil, MD
4:20 PM	Discussion

THURSDAY, DECEMBER 12, 2024

Henry H. Bohlman Presidential Guest Lecture

- Time:* 4:30 PM - 5:30 PM
- Location:* General Session - Level 4
- Moderator:* Alpesh A. Patel, MD, MBA
- 4:30 PM **Introduction**
Alpesh A. Patel, MD, MBA
- 4:35 PM **The Psychology of Power**
Alison Fragale, PhD
- 5:15 PM **Q&A - Discussion**



Alison Fragale, PhD

Why do people sometimes act in unethical and undesirable ways, despite being good people who know right from wrong? Why do well-meaning, well-trained leaders fail at leadership? Psychologist and author Alison Fragale will discuss how power—the feeling of control—changes how individuals think, feel, and behave, for both better and worse, and the implications of this research for leading and living well.

Henry H. Bohlman, MD



Henry H. Bohlman, MD was a pioneer of modern cervical spine surgery and a founding member of CSRS. He served as President in 1989.

In addition to being a leader, he was a teacher and a mentor to more than 120 Fellows and Residents, many of whom have established their own Fellowships as well as have significant academic careers. He trained more CSRS Presidents than anyone in the history of the Society.

Given his influence on our organization, CSRS leadership established a guest lectureship in his name in 2010.

Annual Meeting Reception

- Time:* 5:30 PM - 6:45 PM
- Location:* Exhibit Hall - Level 4

CSRS Leadership Dinner (Invite Only & RSVP Required)

- Time:* 7:00 PM - 9:00 PM

Globus Medical Industry Sponsored Dinner (RSVP Required & Limited Availability)

Evaluating Emerging Concepts in Deformity of the Cervical Spine

- Speakers:* Lee A. Tan, MD; Christoph Hofstetter, MD PhD
- Time:* 7:00 pm - 9:00 pm
- Location:* Location will be disclosed once RSVP is confirmed



Please join our esteemed faculty for an interactive, case-based discussion on emerging concepts in deformity applications of the cervical spine. They will share insights based on their impressive collective experience, including their best practices for pre-operative planning, how they recognize and associate appropriate treatment options for varying spine deformity patients, how they analyze factors that lead to complications and apply complication prevention strategies for differing procedures and approaches for spine deformity treatment, and more.

Scan the QR code to RSVP:



FRIDAY, DECEMBER 13, 2024

Breakfast

Time: 7:00 AM - 8:00 AM
Location: Chicago Ballroom - Level 4

Guest Lounge Open

Time: 7:00 AM - 10:00 AM
Location: Fountainview - Level 3

Registration Open

Time: 7:00 AM - 12:30 PM
Location: Sheraton Ballroom Foyer - Level 4

CSRS Members' Business Meeting & Breakfast

Time: 7:00 AM - 8:00 AM
Location: Chicago Ballroom 8 - Level 4

Morning Welcome

Time: 8:00 AM - 8:05 AM
Location: General Session - Level 4
Moderators: Erica F. Bisson, MD, MPH; Jason W. Savage, MD; Barrett I. Woods, MD

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FRIDAY, DECEMBER 13, 2024

Abstract Session 5: Complications

- Time:* 8:05 AM - 9:20 AM
Location: General Session - Level 4
Moderators: Addisu Mesfin, MD; Rory K. Murphy, MD
- 8:10 AM **41. Reason for Revision Surgery After Cervical Disc Arthroplasty Based on Medical Device Reports Maintained by the United States Food and Drug Administration**
Darren R. Lebl, MD, MBA
- 8:15 AM **42. Preoperative Selective Nerve Root Injections Do Not Increase Risk of Postoperative Infection After Anterior Cervical Decompression and Fusion**
Graham J. Beutler, MD
- 8:20 AM **43. Prognostic Value of Onodera's Prognostic Nutritional Index (OPNI) in Predicting Postoperative Complications in Cervical Spine Surgery**
Isaiah Hughes, BS
- 8:25 AM **44. Graft Migration and Subsidence in ACDF Surgery**
Omar Zakieh, MBBS
- 8:30 AM **45. All-Cause Revision Surgery After Single Level Anterior Cervical Discectomy and Fusion with Plate vs. Stand-Alone Cage**
Wesley M. Durand, MD
- 8:35 AM **Discussion**
- 8:45 AM **46. Primary Repair of Delayed Esophageal Perforation Following Anterior Cervical Discectomy and Fusion**
Christopher Lucasti, MD
- 8:50 AM **47. Impact of Added Morbidity when Performing Cervical Circumferential Cervical Fusion (CCF) Compared to ACDF Alone: Results from 227 Prospectively Randomized Enrolled Subjects Treated with 3-level Fusion**
Alexander C. Lemons, MD
- 8:55 AM **48. Complications, Morbidity, and Mortality Following Corrective Surgery for Cervical Deformity Among Geriatric Cohorts**
Wesley M. Durand, MD
- 9:00 AM **49. Preoperative Chronic Steroid Use Predicts Increased Infections and Readmissions After Anterior Cervical Discectomy and Fusion**
Neil V. Shah, MD, MS
- 9:05 AM **50. Malnutrition as a Risk Factor for Anterior Cervical Discectomy and Fusion Complications: A Large Propensity-Matched Retrospective Cohort Study**
Nischal Acharya, BS
- 9:10 AM **Discussion**

Exhibit Hall Open

- Time:* 9:00 AM - 12:00 PM
Location: Exhibit Hall - Level 4



FRIDAY, DECEMBER 13, 2024

Symposia 3: Critical Evaluation of Spine Surgery in 2024

<i>Time:</i>	9:20 AM - 10:20 AM
<i>Location:</i>	General Session - Level 4
<i>Moderators:</i>	Jason W. Savage, MD; Carmen Vleggeert-Lankamp, MD, MSc, PhD
9:20 AM	How Do We Evaluate Our Ability to Teach/Train the Next Generation of Surgeons Todd J. Albert, MD
9:30 AM	Effective/Efficient Ways in Evaluating Outcomes in Clinical Practice (Registries) Zohar Ghogawala, MD
9:40 AM	How Can We Be Conscientious and Still Provide Optimal Outcomes Sheeraz A. Qureshi, MD, MBA
9:50 AM	The Importance of Mentorship in the Field of Spine Surgery Darrel S. Brodke, MD
10:00 AM	Discussion

Morning Coffee Break

<i>Time:</i>	10:20 AM - 10:50 AM
<i>Location:</i>	Exhibit Hall - Level 4

The banner features a blue background with a pattern of white hexagons. On the right side, there is a photograph of a surgeon in blue scrubs and gloves, performing a surgical procedure. On the left side, there is the CSRS logo, which depicts a stylized spine with a globe in the center, surrounded by the text 'CERVICAL SPINE RESEARCH SOCIETY' and 'FOUNDED 1973'. The main text is in large, white, bold letters: 'CSRS 2025 Call For Grants LETTERS OF INTENT'. Below this, it says 'January 29 through February 28, 2025'. At the bottom left, there is a globe icon followed by the text 'Visit [csr.org](https://www.csr.org) for more information'.

FRIDAY, DECEMBER 13, 2024

Abstract Session 6: Deformity/Outcomes 2

<i>Time:</i>	10:50 AM - 12:05 PM
<i>Location:</i>	General Session - Level 4
<i>Moderators:</i>	Serena S. Hu, MD; Christopher I. Shaffrey, MD
10:50 AM	CSRS Communications Committee Overview Brian W. Su, MD
10:54 AM	Introduction Serena S. Hu, MD; Christopher I. Shaffrey, MD
10:55 AM	51. So Close Yet So Far: The Impact of cSVA Undercorrection During Adult Cervical Deformity Surgery - An Incremental Correction Analysis M Burhan Janjua, MD
11:00 AM	52. Analysis of Success Versus Poor Realignment in Patients with Cervical Deformity: In-Construct Angles Provide Novel Targets for Correction Themistocles S. Protopsaltis, MD
11:05 AM	53. Quantifying the Importance of Upper Cervical Extension Reserve in Adult Cervical Deformity Surgery and Its Impact on Baseline Presentation and Outcomes Peter Passias, MD
11:10 AM	54. Limited Improvement Following Anterior Cervical Discectomy and Fusion in Patients with Age-adjusted Spinopelvic Malalignment: A Propensity Score and Inverse Probability Weighted Cohort Study Chad Z. Simon, BS
11:15 AM	55. Sex, Age and Ethnicity Affect Cervical Spine Sagittal Alignment: Results of a Systematic Review and Meta-Analysis of >35,000 Asymptomatic Participants Alexandra Dionne, BS
11:20 AM	Discussion
11:30 AM	56. Fusion Outcomes of GLP-1 Agonist Therapy in Multi-Level Cervical Spinal Fusion: A Propensity-Matched Analysis Sohrab Vatsia, MD, MS
11:35 AM	57. Should We Re-Instrument the Originally Fused Level in Adjacent-Segment ACDF?: A Quality Outcomes Database Study Mitchell Bowers, MD
11:40 AM	58. Differences in European and North American Results in Secondary Surgery Following Cervical Disc Arthroplasty vs. Anterior Cervical Discectomy and Fusion: Systematic Review and Meta-analysis of Randomized Controlled Trials Brandon A. Sherrod, MD
11:45 AM	59. An Economic Analysis of the Cervical Spondylotic Myelopathy Surgical (CSM-S) Trial: Cost-Effectiveness of Anterior and Posterior Approaches Zoher Ghogawala, MD
11:50 AM	60. Upper Level Instrumentation at C2 versus C3 Does Not Influence Radiographic or Clinical Outcomes after Posterior Cervical Fusion Mark Plantz, MD
11:55 AM	Discussion



FRIDAY, DECEMBER 13, 2024

Lifetime Achievement Award

<i>Time:</i>	12:05 PM - 12:20 PM
<i>Location:</i>	General Session - Level 4
12:05pm	Introduction Michael D. Daubs, MD
12:10pm	Lifetime Achievement Award Acceptance Bradford L. Currier, MD



Bradford L. Currier, MD



Dr. Bradford Currier is the recipient of the 2024 Cervical Spine Research Society Lifetime Achievement Award. Dr. Currier graduated from Georgetown University School of Medicine, performed his residency at the Mayo Clinic in Rochester and fellowship at the University of Miami. He spent his 32-year career practicing at the Mayo Clinic, where he was a Professor of Orthopaedics and Neurosurgery, and now holds the position of Professor Emeritus. He served as Vice-Chair of the Department of Orthopedics and was the Chair for Research and Practice. He founded the Spine fellowship at the Mayo Clinic and trained and mentored 42 fellows during his career.

Dr. Currier has won multiple awards for his research and publications in the field of spinal surgery. He has served as President of the Lumbar Spine Research Society and is a Past-President of the Cervical Spine Research Society. As President of the CSRS he founded the 21st Century Endowment Fund. This endowment, with its generous funding from industry and the CSRS members has allowed the CSRS to fund impactful research to improve patient care in the cervical spine. As a result of Dr. Currier's vision and leadership, the CSRS has awarded granted research awards of over \$5.3 million dollars.

Dr. Currier is the proudest of his family, his wife Nancy of 47 years, his 3 children, and 2 grandchildren. He is a humble, wise, quiet leader. His contributions to the field of Spinal Surgery and the CSRS will be realized for many years to come. The CSRS Board and Awards Committee are honored to give the 2024 CSRS Lifetime Achievement Award to Dr. Bradford Currier.

CSRS Presidential Address

<i>Time:</i>	12:20 PM - 12:50 PM
<i>Location:</i>	General Session - Level 4
12:20 PM	2024 Presidential Introduction Christopher I. Shaffrey, MD
12:30 PM	Presidential Address Alpesh A. Patel, MD, MBA

CSRS New Member Lunch (Invite Only)

<i>Time:</i>	1:00 PM - 2:00 PM
<i>Location:</i>	Fountainview - Level 3

SATURDAY, DECEMBER 14, 2024

Registration Open

Time: 7:00 AM - 9:30 AM
Location: Sheraton Ballroom Foyer - Level 4

Breakfast

Time: 7:00 AM - 8:00 AM
Location: Chicago Ballroom - Level 4

Guest Lounge Open

Time: 7:00 AM - 10:00 AM
Location: Fountainview - Level 3

Morning Welcome & New Member Recognition

Time: 8:00 AM - 8:10 AM
Location: General Session - Level 4

8:00 AM **CSRS Membership Overview & New Member Recognition**
Andrew C. Hecht, MD; Praveen V. Mummaneni, MD

CSRS 2025 Meeting Preview

Time: 8:10 AM - 8:15 AM
Location: General Session - Level 4

8:10 AM **CSRS 53rd Annual Meeting Preview**
Christopher I. Shaffrey, MD



SATURDAY, DECEMBER 14, 2024

2024 Research Grant Awards & Past Grant Presentations

<i>Time:</i>	8:15 AM - 9:15 AM
<i>Location:</i>	General Session - Level 4
<i>Moderators:</i>	Samuel K. Cho, MD; Brandon D. Lawrence, MD
8:15 AM	CSRS Registry Overview Zoher Ghogawala, MD
8:20am	CSRS Research Overview Samuel K. Cho, MD; Brandon D. Lawrence, MD
8:24 AM	Presentation of 2024 Grant Recipients Samuel K. Cho, MD; Brandon D. Lawrence, MD
8:33 AM	Surgical Approaches for Cervical Spondylotic Myelopathy: Impact of Radiographic Characteristics on Pain, Disability, Functional Status, and Quality of Life via an Analysis of the Quality Outcomes Database Andrew K. Chan, MD
8:36 AM	The Potential Association Between the APOE ε4 Gene and the Development of C5 Palsy After Surgical Treatment for Degenerative Cervical Myelopathy: A Prospective Case-control Study Julio C. Furlan, MD, LLB, MBA, MSc, PhD
8:39 AM	Investigation of the Altered Lipid Metabolism in the Intervertebral Disc Under Dyslipidemia Joe Kodama, MD, PhD
8:42 AM	Defining the Severity and Need for Advanced Swallow Studies for Dysphagia After Anterior Cervical Disc Replacement Philip K. Louie, MD
8:45 AM	Discussion
8:54 AM	In Vivo Changes in Disc Stress and Stiffness After One- and Two-Level Cervical Arthrodesis William Anderst, PhD
8:57 AM	Exploration of Appropriate Combinatorial Rehabilitation with Neural Circuit Modification Therapy for Spinal Cord Injury Soichiro Takamiya, MD, PhD
9:00 AM	Use of Tractography and Diffusion Tensor Imaging in the Treatment of Cervical Spondylotic Myelopathy Adam Leibold, MD, MSc
9:03 AM	Accuracy and Safety of Robot-Assisted Cervical Pedicle Screw Placement: A Cadaveric Study Greg S. Kazarian, MD
9:06 AM	Discussion

2024 CSRS RESEARCH GRANT AWARD WINNERS

21st Century Grant Awards

A Quantitative Blood Test for Degenerative Cervical Myelopathy

Co-Primary Investigators: Tej Azad, MD, MS; Nicholas Theodore, MD, MS; Chetan Bettgowda, MD, PhD; Lee Riley, III, MD
Johns Hopkins University

Dietary Intervention over Microglial Activation and Progression of Degenerative Cervical Myelopathy in a Mouse Model

Primary Investigator: Pia Vidal, PhD
Universidad Católica de la Santísima Concepción; Krembil Research Institute

Seed Starter Grant Awards

The Creation of a Digital Spine Consultant Using Large-Language Models

Primary Investigator: Srikanth Divi, MD
Northwestern University Feinberg School of Medicine

Artificial Intelligence-Assisted Image Analysis of Patients Undergoing Laminoplasty

Primary Investigator: Brian Goh, MD
Emory University

Dynamic Imaging, Electrophysiological and Cardiovascular Tests for Evaluation of Individuals with Degenerative Cervical Myelopathy: A Prospective Pilot Study

Primary Investigator: Julio Furlan, MD, LLB, MBA, MSc, PhD
Lyndhurst Centre, KITE Research Institute, University Health Network

Resident Fellow Grant Awards

Bioengineering Placental Mesenchymal Stem Cell Extracellular Vesicles to Target and Protect Neurons in Spinal Cord Injury

Primary Investigator: Jose Castillo, MD
UC Davis Medical Center

Impact of GLP-1 Receptor Agonists on Inflammation, Bone Metabolism, and Fusion after Posterolateral Fusion in Type 2 Diabetes

Primary Investigator: Rajkishen Narayanan, MD
Rothman Orthopaedic Institute at Thomas Jefferson University

Prospective Assessment of Sleep Patterns of Surgically Treated Cervical Myelopathy in the Perioperative Period

Primary Investigator: Stephen Barchick, MD
Emory University

Defining Sleep Pattern Dysregulation in Degenerative Cervical Myelopathy

Primary Investigator: Travis CreveCoeur, MD
Columbia University Irving Medical Center, Weill Cornell Medical Center

Additional Grant Awards

20-Year Comparison of Long-term Differences in Dysphagia: Cervical Arthroplasty and Anterior Cervical Fusion

Primary Investigator: Rick Sasso, MD
Indiana Spine Group



SATURDAY, DECEMBER 14, 2024

Awards Session: Abstract Awards and Scholarship Recipient Recognition

Time: 9:15 AM - 9:30 AM

Location: General Session - Level 4

9:15 AM **Abstract Award Presentation & Scholarship Recipient Recognition**
Michael D. Daubs, MD

2025 Presidential Induction Ceremony

Time: 9:30 AM - 9:40 AM

Location: General Session - Level 4

Passing of the Medallion

Alpesh A. Patel, MD, MBA

9:30 AM **Induction of New President**
Christopher I. Shaffrey, MD

Symposia 4: Controversies in Posterior Cervical Surgery

Time: 9:40 AM - 10:40 AM

Location: General Session - Level 4

Moderators: Michael D. Daubs, MD; Barrett I. Woods, MD

9:40 AM **Cervical Foraminotomy: When/Why/How**
Thomas E. Mroz, MD

9:50 AM **Facet Fusion Devices: When, If Ever?**
Philip K. Louie, MD

10:00 AM **Wound Closure: How to Prevent Muscle Creep**
David Kaye, MD

10:10 AM **Hybrid Constructs: Laminoplasty and Fusion**
Gabriel K. Liu, MSc, FRCS

10:20 AM **PCDF - Stop at C7 or Cross CT Junction**
Daniel M. Sciubba, MD

10:30 AM **Discussion**

SATURDAY, DECEMBER 14, 2024

Abstract Session 7: Fun Facts

- Time:* 10:40 AM - 11:55 AM
Location: General Session - Level 4
Moderators: Matthew W. Colman, MD; Robert F. Heary, MD
- 10:40 AM **Introduction**
- 10:45 AM **61. Does Spinal Canal – Cord Mismatch Adversely Affect Clinical Outcomes of Anterior Cervical Discectomy and Fusion for the Treatment of Cervical Myelopathy?**
Hyuk-joon HJ. Sohn, MD
- 10:50 AM **62. Outcomes After Cervical Laminectomy and Fusion Versus Cervical Laminoplasty in Patients of Advanced Age**
Stephen Selverian, MD
- 10:55 AM **63. Ossification of Posterior Longitudinal Ligament (OPLL) Growth in C1/2 Segment and its Effect on Clinical Outcome: Is C2 Laminectomy Really Necessary?**
Dongkyu Kim, MD
- 11:00 AM **64. Virtual Reality Hand Dexterity Training to Augment Post-surgical Neurological Recovery in Degenerative Cervical Myelopathy: A Prospective Clinical Trial**
Aditya Vedantam, MD
- 11:05 AM **65. Radiographic Outcomes and Subsidence Rate in Hyperlordotic Versus Standard Lordotic Interbody Spacers in Patients Undergoing Anterior Cervical Discectomy and Fusion**
Rajkishen Narayanan, MD
- 11:10 AM **Discussion**
- 11:20 AM **66. Impact of Obstructive Sleep Apnea on Outcomes after ACDF: A Propensity Matched Analysis**
Rajkishen Narayanan, MD
- 11:25 AM **67. Understanding the Impact of Low-Density Lipoprotein Levels and Lipid-Lowering Agents on Rates of Pseudarthrosis After Anterior Cervical Discectomy and Fusion**
Vikas V. Patel, MD
- 11:30 AM **68. Clinical Determinants of Neurological Recovery after Acute Traumatic Cervical Spinal Cord Injury: Analysis of 655 Prospectively-Accrued Cases from the NASCIS 2 and NASCIS 3 Trials.**
Julio C. Furlan, MD, LLB, MBA, MSc, PhD
- 11:35 AM **69. Shifting Trends and Regional Disparities in Intraoperative Neuromonitoring Usage for Anterior Cervical Discectomy and Fusion**
Dana G. Rowe, BA
- 11:40 AM **70. Neuromonitoring in Cervical Spine Surgery: Demographics and Geographical Trends - A Survey of the Cervical Spine Research Society**
Daniel Robinson, MD
- 11:45 AM **Discussion**

Annual Meeting Farewell

- Time:* 11:55 AM - 12:00 PM
Location: General Session - Level 4
Moderators: Erica F. Bisson, MD, MPH; Jason W. Savage, MD; Barrett I. Woods, MD



ANNUAL MEETING SCHOLARSHIP RECIPIENTS

Thanks to CSRS and Medtronic, the 25 individuals listed below received travel, housing, and registration funding as a CSRS Annual Meeting Scholarship. CSRS is grateful to the greater than 60 individuals who applied for these competitive awards. The involvement of residents and fellows in CSRS is critical to the continued development of the cervical spine field. Congratulations to our 2024 Scholarship Recipients!

2024 Annual Meeting Travel Scholarships, sponsored by Medtronic

Ameen Barghi, MD, MPP
 Jennifer Bell, MD
 Graham Beutler, MD
 Hannah Levy, MD
 Jung (Anthony) Mok, MD
 Jennifer O'Donnell, MD

Djani Robertson, MD
 Neil Shah, MD, MS
 Husain Shakil, MD, MSc
 Brandon Sherrod, MD
 Brian Saway, MD
 Andrew Vega, MD

2024 Annual Meeting Travel Scholarships, sponsored by CSRS

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 Madeline Greil, MD
 Gregory Kazarian, MD
 Jaward Khalifeh, MD
 Hirofumi Kusumoto, MD, MPH
 Matthew Meade, DO
 Joshua Mizels, MD

Alexander Schupper, MD
 Ian Clapp, MD
 Noor Maza, MD
 John Cale, MD
 Andrew Rowland, MD
 Mason Young, MD

2023 ANNUAL MEETING SCHOLARSHIP RECIPIENTS



VIRTUAL POSTER HALL

How to view the CSRS Virtual Poster Hall:

- **CSRS Meeting App:** Click on the “Virtual Poster Hall” in the Scientific Content menu. Select the poster you wish to view. Read the full abstract or scroll to the “Resources” section and click the button to view the Virtual Poster. (For more information on downloading the meeting app, please see page 53.)
- **Attendee Meeting Portal:** Enter the Attendee Meeting Portal by clicking on the link in the “Know Before You Go” or any daily meeting email from CSRS. Click on the “Virtual Poster Hall” button on the home screen. Select the poster you wish to view. Click on the up arrow to listen to any attached audio clips and to view the full abstract.

The following abstracts are included in the Virtual Poster Hall:

- Using PROMs to Assess Clinical Success of Anterior Cervical Discectomy & Fusion for Degenerative Cervical Spine Conditions Causing Isolated Radiculopathy
Chierika Ukogu Clements, MD
- Identification of a Novel Genetic Variant Associated with Adjacent Segment Disease: Analysis of Spinal Fusions in the UK BioBank
Rohit K. Bhan, MD, MS
- Comparison of Surgical and Patient-reported Outcomes in Patients with Normal Versus Abnormal Dentition Status Following ACDF
Darrel S. Brodke, MD
- Preliminary Results of a RAND/UCLA Appropriateness Method Evaluation of Bone Graft and Biologics in Anterior Cervical Discectomy and Fusion
Sohrab Virk, MD
- Utilization of the Fragility Index to Assess Randomized Controlled Trials Comparing Cervical Total Disc Arthroplasty to Anterior Cervical Discectomy and Fusion
Zachary Backstrom, BS
- A Comparison of Demographic and Microorganism Differences between De Novo and Postoperative Infections
Michael Carter, BS
- Not All Cervical Traumas Are Created Equal: Assessing In-Hospital Complications after Fusion for Cervical Traumas with Neurologic Deficits of Varying Severity
Michael Carter, BS
- A Comparative Analysis of Natural Language Processing Architectures in Automating Current Procedural Terminology (CPT) Coding for Patients Undergoing Cervical Spine Fusions
Austin R. Chen, BA
- C3 Laminectomy Versus Conventional Open Door C3–C7 Laminoplasty: A Systematic Review and Meta-analysis
Ping-Yeh Chiu, MD
- A Retrospective Analysis of 141 Patients Undergoing Correction Surgery for Cervicothoracic Deformity by a Single Surgical Team: Are Elderly Patients at an Elevated Risk for Complications
Ping-Yeh Chiu, MD
- Novel Radiologic Parameter for Assessing Decompression Adequacy in Anterior Cervical Decompression Surgery: The V-line
Sung Tan Cho, MD
- Bioactive Glass Ceramic vs Allograft: A Comparison of Clinical and Radiological Outcome in Single Level ACDF
Hyunik Cho, MD
- Funnel-shaped Oblique Keyhole Foraminotomy for Better Foraminal Decompression in Patients with Cervical Spondylotic Radiculopathy
Sung Hoon Choi, PhD
- A Biomechanical Comparison of Alternatives to C2 Pedicle Screws
Jason DePhillips, MS
- Mortality from Falls Leading to Simultaneous Fractures of the Atlas (C1) and Axis (C2)
Michael B. Cloney, MD, MPH
- Obesity Does Not Impact Clinical Outcomes in Anterior Cervical Disc Replacement
Daniel Coban, MD



VIRTUAL POSTER HALL

18. Increased Risk of Adverse Events in Patients with Systemic Lupus Erythematosus Undergoing Single-level Anterior Cervical Discectomy and Fusion

Rushabh H. Doshi, BA, MPH

20. Clinical and Radiographic Outcome Comparison of Seven Cervical Disc Arthroplasty Devices

David P. Foley, MD, MBA

21. Posterior Cervical Laminectomy and Fusion May Demonstrate Better Maintenance of Horizontal Gaze Compared with Laminoplasty

Bradley Hammoor, MD

22. Comparison after Anterior Cervical Discectomy and Fusion with BGS-7 Spacer (NOVOMAX FUSION) and Allograft Spacer: A Matched Case Multicenter Study

Giwuk Jang, MD

24. Which Surgical Strategy Could Result in Optimal Outcome for Cervical Myelopathy Combined with Radiculopathy?: Comparison Between Laminoplasty with Foraminotomy Versus Anterior Cervical Discectomy and Fusion

Hyuk-joon HJ. Sohn, MD

25. Deep Sensory Disturbance is a Risk Factor for Post-laminoplasty Kyphosis in Patients with Cervical Posterior Longitudinal Ligament Ossification

Tomoya Kanto, MD

26. Grip Strength Changes Most in the Acute Postoperative Period Following Cervical Decompression and Fusion for Cervical Myelopathy

David Kim, MD

27. Hyperlipidemia Alters the Lipid Metabolism in Mouse Intervertebral Disc and Leads to Disc Degenerative Changes

Joe Kodama, MD, PhD

28. How Common and Safe is Early Hospital Discharge After an Elective Single-Stage Front-Back Cervical Surgery?

Nathan J. Lee, MD

29. The Efficacy of Cervical Spinal Fusion in Patients with Parkinson's Disease

Hannah A. Levy, MD

30. The Superiority of Endplate Hounsfield Units Relative to Lumbar Vertebral Hounsfield Units in Predicting Subsidence after Anterior Cervical Discectomy and Fusion

Hannah A. Levy, MD

31. Surgical Outcomes for Degenerative Cervical Myelopathy with Different Severities of Hand Dexterity Impairment: A Prospective Study with 1-year Follow-up

Guoyan Liang, MD

32. Subsidence Following Anterior-Only Anterior Cervical Corpectomy Fusion for Cervical Spondylotic Myelopathy: Systematic Review and Meta-analysis

Philip K. Louie, MD

34. How Reliable Is the Assessment of Fusion Status Following ACDF Using Dynamic Flexion-Extension Radiographs?

S. Tim Yoon, MD, PhD

35. Odontoid Fractures Portend Higher Mortality Risk Compared to Hip Fractures: A Matched Cohort Analysis

Andy Ton, BS

36. Safety and Efficacy of Same-day Discharge Following 3- and 4-level Anterior Cervical Spine Surgery: A Multicenter Study

Paul D. Minetos, MD, MBA

37. Six-year Follow-up of a Prospective FDA IDE Trial Evaluating a PEEK-on-Ceramic Cervical Disc Replacement

Michael Musacchio, MD

38. How Does 2 Level Cervical Disc Replacement Compare to Single Level?

Ashvin I. Patel, MD

39. Forty-eight-month Clinical Outcomes of Patients Over 60 Years Old in a Prospective, Controlled, Multicenter Study Evaluating Two-level Cervical Disc Arthroplasty with a PEEK-on-ceramic Artificial Disc

Andrew Park, MD

40. Does Posterior Cord Compression by Ligamentum Flavum Adversely Affect Clinical Outcome of Anterior Cervical Discectomy and Fusion?

Sehan Park, MD, PhD

41. Late to Extubate? Risk Factors and Associations for Delayed Extubation after Adult Cervical Deformity

Peter G. Passias, MD

VIRTUAL POSTER HALL

42. What is the Difference of a Decade of Experience? Comparing Two Multi-center, Prospective, Randomized Clinical Investigational Device Exemption Trials of an Approved TDR at Two Contiguous Levels of the Cervical Spine
Ashwin I. Patel, MD
43. Is the Atlantoaxial Level Overlooked in the Radiologic Interpretation of Cervical Magnetic Resonance Imaging?
Taylor Paziuk, MD
44. Machine Learning-based Cluster Analysis Identifies Four Unique Phenotypes of Degenerative Cervical Myelopathy Patients with Distinct Clinical Profiles and Long-term Functional Outcomes
Karlo Pedro, MD
45. Specific Cervical Spine Surgical Constructs can be Accurately Identified with Deep Learning Algorithms
Zachariah W. Pinter, MD
46. Respiratory Comorbidities Increase Risk for Postoperative Hematoma Requiring Reoperation Following Anterior Cervical Discectomy and Fusion
Dana G. Rowe, BA
47. Therapeutic Time Window of Intravenous Muse cell Administration for Spinal Cord Injury in Mice
Kotaro Sakashita, MD
48. Clinical and Radiographic Outcomes of Cervical Disc Replacement for Treatment of Adjacent Segment Disease: A Case Series
John F. Sencaj, MS
49. Temporal Trends of Improvement in Patients with Cervical Radiculopathy after Anterior Cervical Surgery
Sheeraz A. Qureshi, MD, MBA
50. Both Terminal E-beam and Gamma Irradiation Negatively Impact Biological Properties of Demineralized Bone Matrices
Suzanne Tabbaa, PhD
51. Effect of Thoracic Inlet Angle on Cervicothoracic Parameters and Patient Reported Outcomes in Posterior Multi-Cervicothoracic Fusion
Eric Truumees, MD
52. Comparison of Outcomes of Ambulatory versus In-Hospital Cervical Disc Replacement
Gregory A. Snigur, MS
53. Twenty-four-month Assessment of Arthrodesis in a Prospectively Enrolled Cohort of 50 Subjects Treated with ACDF at 3 Levels
Alexander Lemons, MD
54. Severe Paresthesia at 1-year After Surgery for Degenerative Cervical Myelopathy Could Relate with the Significantly Lower Treatment Satisfaction Independent from the Improvement of Myelopathy
Koji Tamai, MD, PhD
55. Changes in Fat Infiltration of Cervical Paraspinal Muscles after Anterior Cervical Discectomy and Fusion
Vidushi Tripathi, BS
56. Anterior Cervical Discectomy and Fusion: Incidence and Outcomes in Ehlers-Danlos Syndrome
Eden N. VanderHoek, BS
57. The Effect of Hybrid Cervical Disc Arthroplasty and Anterior Cervical Fusion Constructs on Adjacent Level Intradiscal Pressures: A Biomechanical Study
Anthony Viola, III, DO
58. Sarcopenia and Cage Subsidence after Single Level Anterior Cervical Discectomy and Fusion
Jesse Wang, MD
59. Patient Perceptions of Same Day versus Overnight Stay for Cervical Surgery
Marc A. Weinstein, MD
60. High Preoperative Expectations May Not Need to be Feared
Joseph B. Wick
61. Can C2 Dome-like Expansive Laminoplasty Provide Better Clinical Outcomes than Laminectomy and Posterior Instrumented Fusion in Severe JOA Patients with OPLL Involving C2?
Sun-joon Yoo, MD
62. Do Octogenarians Have Worse Outcomes Following Cervical Spine Surgery?
Omar Zakieh, MBBS
63. Level Selection in Posterior Cervical Fusion: The Clinical Impact of Junctional Crossing
Mitchell Bowers, MD
64. Varenicline Reduces Delayed Union Rates in Nicotine-Dependent Adults with Cervical Fractures
Andrew S. Zhang, MD



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2024 ABSTRACT AWARD WINNERS

Clinical Research Award

1st Place: Patients With and Without Severe Systemic Illness, Measured by ASA Grade, Benefit from Surgery for CSM: A Report from the Quality Outcomes Database

Vardhaan Ambati, BS – *University of California San Francisco*

2nd Place: Disc to Disc: Early Results of the Multi-center, Prospective, Randomized Clinical Investigational Device Exemption Trial Comparing a Novel Total Disc Replacement (TDR) to an Approved TDR Control at Two Contiguous Levels of the Cervical Spine

Jad Khalil, MD – *Michigan Orthopaedic Surgeons; Beaumont University Hospital*

3rd Place: Surgical Versus Conservative Treatment for Odontoid Fractures in the Elderly: an International Prospective Comparative Study

Jeroen Huybregts, MD – *Leiden University Medical Center*

Basic Science Award

1st Place: Therapeutic Efficacy of Clinically Relevant Human iPSC-derived Neural Stem/Progenitor Cell Transplantation for Chronic Cervical Spinal Cord Injury

Ryo Ogaki, MD – *Keio University*

2nd Place: Profiling of Cerebrospinal Fluid and Blood EVs-miRNAs for Predicting Natural Recovery from Acute Spinal Cord Injury in Rat Models

Tomoharu Tanaka, MD/PhD Student – *Keio University*

3rd Place: Therapeutic Effects of Combined Therapy Involving Scar Resection, Decellularized Scaffold, and Human Induced Pluripotent Stem Cell-derived-neural Stem/Progenitor Cells Transplantation in Chronic Complete SCI

Keitaro Ito, MD – *Keio University*

Resident/Fellow Research Award

1st Place: Fusion Outcomes of GLP-1 Agonist Therapy in Multi-Level Cervical Spinal Fusion: A Propensity-Matched Analysis

Sohrab Vatsia, MD, MS – *Penn State Health*

2nd Place: Are Postoperative Neck Pain and Kyphotic Change After Laminoplasty Affected by Degree of Facet Joint Degeneration?

Gumin Jeong, MD – *Asan Medical Center*

3rd Place: Impact of Obstructive Sleep Apnea on Outcomes after ACDF: A Propensity Matched Analysis

Omar Tarawneh, MS – *Rothman Orthopaedic Institute*

Poster Awards

1st Place General Poster: Novel Radiologic Parameter for Assessing Decompression Adequacy in Anterior Cervical Decompression Surgery: The V-line

Sungtan Cho, MD, PhD – *Seoul Seonam Hospital*

1st Place Resident/Fellow Poster: Do Octogenarians Have Worse Outcomes Following Cervical Spine Surgery?

Omar Zakieh, MBBS – *Vanderbilt University Medical Center*



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Exhibit Hall Hours

Thursday, December 12 9:00 AM - 6:45 PM

Coffee Break 10:20 AM - 10:40 AM
 Coffee Break 2:50 PM - 3:15 PM
 Annual Meeting Reception 5:30 PM - 6:45 PM

Friday, December 1 9:00 AM - 12:00 PM

Coffee Break 10:20 AM - 10:50 AM

CSRS EXHIBITORS



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ATEC is a medical device company dedicated to revolutionizing the approach to spine surgery through innovation. ATEC's Organic Innovation Machine™ is the greatest concentration of spine knowhow in the industry and committed to the creation of clinical distinction. Our vision is to be the standard bearer in spine. Visit our website for more information: www.atecspine.com



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Stop by the CSRS booth to pick up a free copy of the official journal of CSRS. *Clinical Spine Surgery* provides readers with primary research studies, specifically level 1, 2 and 3 studies, ensuring that articles that may change a surgeon's practice are published. Each issue includes articles on understanding healthcare business and interpreting complex research methodology. *Clinical Spine Surgery* is your single source for up-to-date, evidence-based recommendations for spine care.



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Atlas Spine Inc. creates, manufactures, and markets minimally invasive implants and instrument systems for the treatment of various pathologies of the spine. Atlas has established a reputation as an innovator in the spine implant industry. Our mission is to develop and market the most innovative, cost-effective, high quality, and clinically efficacious systems available.

Curiteva

304

Curiteva is a privately held technology and manufacturing company based in Huntsville, AL. Founded by a machinist entrepreneur, the company prides itself on world-class manufacturing expertise and being the pioneer of 3D Printed Trabecular PEEK Implants. Since its founding, Curiteva has been focused on building a portfolio of best-in-class implants and instruments for spine surgery.

Centinel Spine

207

Centinel Spine®, LLC is the leading global medical device company exclusively focused on addressing cervical and lumbar spinal disease with prodisc®, the most complete total disc replacement (TDR) technology platform in the world. The prodisc technology is the most studied and clinically-proven TDR system across the globe, validated by over 540 publications and over 250,000 implantations.

Elevation Spine

108

Elevation Spine is a medical device company focused on developing and commercializing products for spine surgery. Our product, Saber-C uses Saber Technology™ which offers the most versatile and easy-to-use system for anterior spinal fusion procedures.



405

CeraPedics is a global, commercial-stage orthopedics company that aspires to redefine the standard of care for bone repair by healing bones faster, at higher rates, without compromising safety. CeraPedics' product, i-FACTOR®, is FDA approved for single-level c-spine fusions in the US. CeraPedics' next-generation product is being evaluated through ASPIRE and was granted a Breakthrough Device Designation by the FDA.

ENOVIS

110

Enovis is an innovation-driven medical technology growth company dedicated to developing clinically differentiated solutions that generate measurably better patient outcomes and transform workflows. Powered by a culture of continuous improvement, global talent and innovation, the Company's extensive range of products, services, and integrated technologies fuel active lifestyles in orthopedics and beyond.



CSRS EXHIBITORS



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Globus Medical, Inc. is a leading musculoskeletal technology company, founded in 2003 by experienced engineers and business leaders who believed significantly better patient outcomes in spine surgery were possible. At Globus Medical, listening to customers and responding with action is paramount. The company is focused on solving unmet customer and patient needs with world class engineering and technology.



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Highridge Medical is dedicated to restoring daily life for patients through comprehensive spinal solutions with a focus on education, training, and clinical support for surgeons. Along with cervical disc replacement, vertebral body tethering, comprehensive spinal fixation, and fusion implants, Highridge offers minimally invasive procedural solutions, a suite of biologic solutions, EBI SpF and SpinalPak bone healing products.



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J&J MedTech keep people moving



201

KIC Ventures LLC stands as a pioneering private equity healthtech investment firm with the world's largest portfolio of majority-owned spine companies, deeply committed to forging a lasting global presence in the realm of innovative spinal technologies.



100

We help patients live fuller, more active lives by giving surgeons the technology they need to minimize non-unions. We achieve this with a unique surface design called NeedleGrip™. MagnetOs™ bone graft, which features NeedleGripSurface Technology, has been used to treat 25,000 patients across the Globe.



506

Life Instruments is dedicated to serving surgeons with the highest quality surgical instruments. Handcrafted from the finest materials, Life Instruments are an extension of the surgeon's hands. We customize and modify instruments to fit individual needs in addition to providing ongoing development of new products with surgeons and healthcare professionals.



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SpineCAMP is an FDA 510(k) cleared (K231668), AI-powered clinical decision support software that analyzes X-ray images of the spine to produce precise, objective metrics associated with spinal stability and alignment. SpineCAMP visualizes intervertebral motion via a proprietary image registration method known as "stabilization", and seamlessly integrates comprehensive X-ray measurements directly into clinical workflow.



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Bold thinking. Bolder actions. We are Medtronic. We lead global healthcare technology and boldly attack challenging health problems facing humanity by searching out and finding solutions. Powered by our diverse knowledge, insatiable curiosity, and desire to help all those who need it, we deliver innovative technologies that transform the lives of two people every second, every hour, every day.



203

MiRus is a life sciences company that developed and is commercializing proprietary novel biomaterials, implants and procedural solutions for treatment of spine, orthopaedic and structural heart disease. Inspired by material science of NASA for rocket engines, MiRus created Rhenium based medical alloys that transform medicine by making surgeries less invasive and implants safer and more durable.



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The Hive™ portfolio of interbody fusion devices, with the patented Soft Titanium® lattice, provides surgeons and patients ideal biomechanical elastic modulus properties, clear and precise diagnostic imaging capability, osteoblast cell attraction and integration – all features that lead to consistently strong fusion constructs and efficacious clinical experiences. For more information, please visit www.nanohive.com.



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As the leading patient-centered organization in spinal health, NSHF advances innovative research, education, and prevention strategies. We empower individuals with essential resources for their spine health journey, envisioning a future free from spine-related suffering, where everyone can live fully without pain or limitations.

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<p>NGMedical GmbH 102</p> <p>We are an owner-managed company specializing in the development of innovative spinal implants since 2001. NGMedical exploits longtime experience combined with a high degree of creativity for the development of innovative product concepts. Cooperation with a team of experienced surgeons and scientists is the basis for market-driven orientation. Many product solutions widely used as standards derive from our team.</p>	<p>Royal Biologics 508</p> <p>Royal Biologics is an orthobiologics & life science company focusing on the research, development and advancement of novel solutions to promote healing in a wide range of clinical settings. Our primary goal is to use Autologous and Live Cellular therapies to treat a broad range of musculoskeletal and regenerative medicine needs.</p>
<p>Orthofix-SeaSpine 500</p> <p>Orthofix is a global medical technology company headquartered in Lewisville, Texas. By providing medical technologies that heal musculoskeletal pathologies, we deliver exceptional experiences and life-changing solutions to patients around the world. Orthofix offers a comprehensive portfolio of spinal hardware, bone growth therapies, specialized orthopedic solutions, biologics and enabling technologies, including the 7D FLASH™ navigation system.</p>	<p>stryker 409</p> <p>Stryker is one of the world's leading medical technology companies and, together with its customers, is driven to make healthcare better. The company offers innovative products and services in Medical and Surgical, Neurotechnology, Orthopaedics and Spine that help improve patient and healthcare outcomes.</p>
<p>Providence Medical Technology 403</p> <p>Our purpose is to improve clinical outcomes for high-risk patients and prevent c-spine surgical failures. Providence Medical Technology, Inc. is a privately-held medical device company focused on innovative solutions for c-spine conditions. It has pioneered a proprietary approach to cervical fusion and developed surgical instrumentation and implants for unique benefits to the \$2 billion worldwide c-spine market.</p>	<p>Surgeons Capital Management 510</p> <p>At Surgeons Capital Management, we're not just another wealth management firm. Our highly experienced team specializes in understanding the needs of surgeons and providing customized solutions. Whether you're looking for a comprehensive plan, managing taxes or planning for business succession, we're committed to helping you with all your financial needs.</p>
<p>RosmanSearch 205</p> <p>RosmanSearch is a physician recruitment firm with an edge. Our approach blends data-driven insights with focused recruiters ensuring impactful placements. We don't just fill positions; we lean on our expertise in neurosurgery and neurology to curate matches. Whether permanent placement, executive search, or locum tenens, our recruiters utilize robust data analytics and unparalleled expertise to ensure unmatched placement precision.</p>	<p>Tobra Medical 209</p> <p>Tobra Medical specializes in autograft bone collection from the high-speed drill with the market leading Tobra Bone Basket. The Bone Basket is the only collector on the market with a graft compressor that compresses bone into a high-quality bone putty consistency output. In addition, the fine mesh filter basket maximizes autograft collection.</p>



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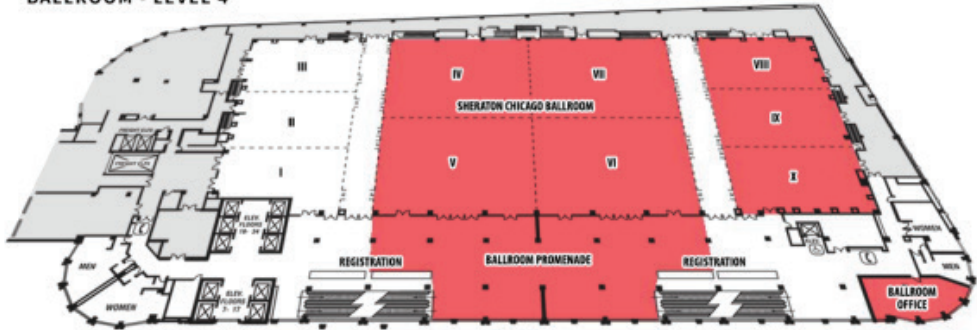
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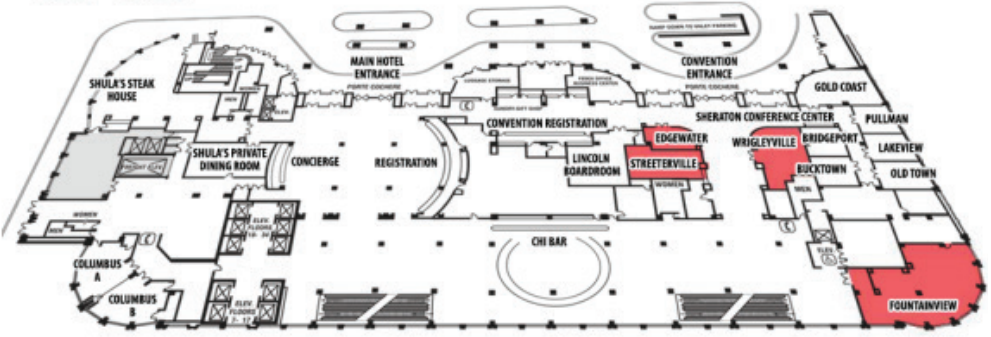


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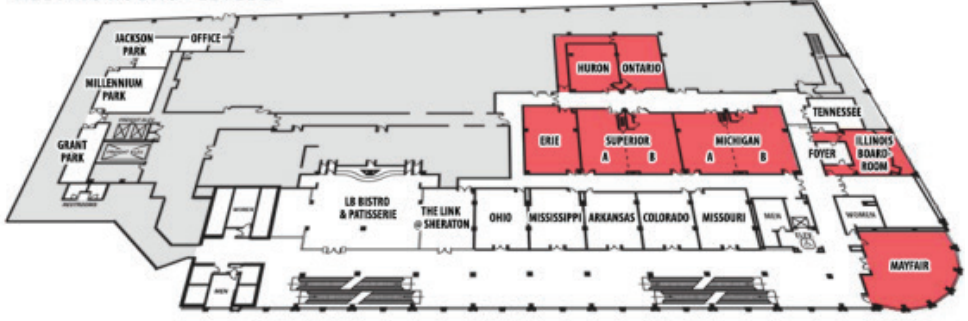
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