Powered by the Scoliosis Research Society

31st International Meeting on Advanced Spine Techniques

31st IMAST

San Diego

CALIFORNIA, USA APRIL 10-13, 2024

PRELIMINARY PROGRAM

SRS Scoliosis Research Society

IMAST Committee
Eric O. Klineberg, MD, Chair
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Dates to Remember

Early Registration Rate Closes	March 11, 2024
Cancellation Refund Deadline	March 11, 2024
Pre-registration Closes	March 28, 2024
On-Site Registration Opens	April 10, 2024

Future Educational Events

Annual Meeting

59th Annual Meeting
September 10-14, 2024 | Barcelona, Spain

60th Annual Meeting
September 17-20, 2025 | Charlotte, North Carolina, USA

61st Annual Meeting
October 7-10, 2026 | Sydney, Australia

International Meeting on Advanced Spine Techniques

32nd IMAST
April 2-5, 2025 | Glasglow, Scotland

33rd IMAST
April 15-18, 2026 | Toronto, ON, Canada

Chair's Message

Dear Delegates and Attendees,

I look forward to welcoming you to beautiful San Diego, California and the 31st International Meeting on Advanced Spine Techniques (IMAST), *powered by* the Scoliosis Research Society.

It's fitting that we are in San Diego which, in recent years, has become home to new innovations in healthcare and biotech. This hot-bed of exploration is exactly the kind of place where advanced spine technology belongs.

This year's IMAST personifies the meeting's mission to be the premier global forum where professionals treating complex spinal conditions meet to share, discuss and demonstrate groundbreaking research with a focus on innovation.

As always, one of the highlights of this meeting is Cases and Cocktails. This year's topics include Novel Techniques in Complex Thoracolumbar Deformity, Innovation in Pediatric Deformity and Adult and Pediatric Cervical Deformity. We are also hosting a first-ever IMAST keynote speaker Assuntina G. Sacco, MD, from UC San Diego Health who will cover the topic of cellular senescence.

A don't miss session includes an exclusive AANS/CNS section on Disorders of the Spine and Peripheral Nerves on the topic of Minimally Invasive Spinal Surgery: Endoscopic to Deformity.

Additionally, we reviewed 531 abstracts and have selected 93, with a new review category that focuses on innovation. And this year, in addition to the Thomas E. Whitecloud Award for best paper, we will present the first IMAST Innovation Award for the most innovative podium abstract presentation at the meeting — as voted by the membership — which will be presented after the final session.

On Saturday, we host the second IMAST Innovation Day which offers an opportunity for SRS stakeholders to meet with key opinion leaders and IMAST attendees. This day is to be used for study group meetings, industry educational events and more. We strongly encourage attendees to stay the extra day and be part of this experience.

We offer a special thank you to our industry partners for their continued support. Plan your schedule accordingly so that you can see all of the latest innovations in the exhibit hall and during the Hands-on Workshops. More information on these can be found beginning on page 29.

I cannot wait for you to experience this exceptional IMAST. I will see you in San Diego!

Eric O. Klineberg, MD
IMAST Chair

About SRS

Founded in 1966, the Scoliosis Research Society is an organization of medical professionals and researchers dedicated to improving care for patients with spinal deformities. Over the years, it has grown from a group of 37 orthopaedic surgeons to an international organization of more than 1,600 health care professionals.

Mission Statement

The purpose of the Scoliosis Research Society is to foster the optimal care of all patients with spinal deformities.

DEI Statement

The SRS recognizes the benefit of bringing the knowledge, perspectives, experiences, and insights of a diverse membership to our society. We are committed to including outstanding members from the broad spectrum of human ethnicities, genders, sexual orientations, national origins, geographic backgrounds, abilities, disabilities, religious beliefs, and ages. We will create a culture that is equitable and inclusive, where everyone has a voice and differences are celebrated. By building a membership and leadership who better reflect the diverse communities we study and care for, we foster better and more equitable care for patients with spinal disorders.

Membership

SRS is open to orthopaedic surgeons, neurosurgeons, researchers, and allied health professionals who have a practice that focuses on spinal deformity. Visit www.srs.org/membership for more information on membership types, requirement details, and to apply online.

Programs and Activities

SRS is focused primarily on education and research that include the Annual Meeting, the International Meeting on Advanced Spine Techniques (IMAST), Regional Courses, the Research Education Outreach (REO) Fund, which provides grants for spine deformity research, and development of patient education materials.

Website Information

For the latest information on SRS meetings, programs, activities, and membership please visit www.srs.org. The SRS Website Committee works to ensure that the website information is accurate, accessible, and tailored for target audiences. Site content is varied and frequently uses graphics to stimulate ideas and interest. Content categories include information for medical professionals, patients/ public, and SRS members.

Society Office Staff

Ashtin Neuschaefer, CAE - *Executive Director*
Giovanni Claudio - *Website Development Manager*
Rebecca David - *Education Manager*
Grace Donlin - *Meetings Manager*
Erica Ems - *Membership & Development Manager*
Madison Lower - *Education Manager*
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Michele Sewart, PMP - *Senior Communications Manager*
Leah Skogman, CMP - *Senior Meetings Manager*
Martie Stevens - *Administrative Manager*
Shawn Storey - *Brand & Digital Content Manager*

Social Media

Join the conversation surrounding IMAST by including #SRSIMAST24 in your social media posts.

@srs_org

@ScoliosisResearchSociety

@srs_org

@Scoliosis Research Society

Scoliosis Research Society

555 East Wells Street, Suite 1100
Milwaukee, WI 53202
Phone: 414-289-9107
Fax: 414-276-3349
www.srs.org

General Meeting Information

Meeting Description

The 31st IMAST will offer a meeting experience where leading spine surgeons, innovative researchers and the most advanced spine technologies come together in an international forum to demonstrate and discuss recent advances in spine surgery.

IMAST Mission & Vision Statement

Mission

To freely present, discuss and debate emerging technologies used for the treatment and care of patients with complex spine conditions.

Vision

To be the premier global forum where professionals treating complex spinal conditions meet to share, discuss and demonstrate groundbreaking research with a focus on innovation.

Learning Objectives

Upon completion of IMAST, you should be able to:

1. Assess and evaluate the advantages and disadvantages of robotics, navigation and enabling technology for the treatment of spinal conditions
2. Discuss the impact of osteoporosis on the ability to treat spinal pathologies
3. Examine the different types of anterior approaches for pediatrics scoliosis and assess the limitations of each approach
4. Analyze the operative and nonoperative care of AIS throughout a patient's life, from childhood to adulthood
5. Understand the options for the management of adult spinal deformity using minimally invasive surgical techniques

Target Audience

Spine surgeons (orthopaedic and neurological surgeons), residents, fellows, nurses, nurse practitioners, physician assistants, engineers, and company personnel.

Language

Presentations and course materials will be presented and provided in English.

Online Speaker Ready Room

The online Speaker Ready Room will open February 1, 2024 and will close on April 1, 2024 at 17:00, EDT.

SRS Membership

Involvement in the 31st IMAST counts towards SRS membership meeting requirements. Prospective members and new candidate members are encouraged to view the SRS membership section to learn more about membership with SRS, upcoming meetings, and more.

FDA Statement (United States)

Some drugs and medical devices demonstrated during this virtual meeting have limited FDA labeling and marketing clearance. It is the responsibility of the physician to be aware of drug or device FDA labeling and marketing status.

Insurance/Liabilities and Disclaimers

The materials presented during this meeting are made available for educational purposes only. The material is not intended to represent the only, nor necessarily best, methods or procedures appropriate for the medical situations discussed, but rather is intended to present an approach, view, statement or opinion of the faculty that may be helpful to others who face similar situations. SRS disclaims any and all liability for injury or other damages resulting to any individual attending a scientific meeting and for all claims that may arise out of the use of techniques demonstrated therein by such individuals, whether these claims shall be asserted by a physician or any other person.

General Meeting Information

ACCME Accreditation Statement

The Scoliosis Research Society is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

Credit Designation

The Scoliosis Research Society designates this live activity, 31st IMAST, for a maximum of 14 *AMA PRA Category 1 Credits*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

CME Certificates

CME Certificates will be available onsite to pre-registered attendees. An online CME link will be emailed to all participants within 30 days following the meeting.

Disclosure of Relevant Financial Relationships

It is the policy of SRS to ensure balance, independence, objectivity, and scientific rigor in all educational activities. In accordance with this policy, SRS identifies all financial relationships held with an ineligible company* by individuals in a position to influence or control the content of a CME activity. Relevant financial relationships are mitigated by SRS to ensure that all scientific research referred to, reported, or used in a CME activity conforms to the generally accepted standards of experimental design, data collection, and analysis. Complete faculty disclosures will be included in the Final Program.

**An ineligible company is one whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients.*

Meeting Overview

**subject to change*

	Wednesday, April 10	Thursday, April 11	Friday, April 12
Morning		07:00 - 18:00 Registration Open 08:00 - 09:00 Hands-On Workshops* *with breakfast* 09:00 - 09:30 Exhibit Viewing & Refreshment Break* 09:30-11:45 Abstract Session 1: Whitecloud Award Nominated Papers 11:45 - 12:00 Exhibit Viewing & Lunch Pick-Up*	07:00 - 17:00 Registration Open 07:30 - 08:45 Concurrent Sessions (Abstract Sessions 5A - 5D) 08:45 - 09:00 Exhibit Viewing & Refreshment Break* 09:00 - 11:00 Abstract Session 6 & Keynote Address 11:00 - 11:30 Exhibit Viewing* 11:30 - 12:30 Hands-On Workshops* *Lunch Pick-Up (11:15-11:30)*
Afternoon	15:00 - 18:00 Registration Open	12:00 - 13:00 Hands-On Workshops* 13:00 - 13:30 Exhibit Viewing* 13:30 - 15:00 Concurrent Sessions (Sessions 2A & 2B) 15:00 - 15:30 Exhibit Viewing & Refreshment Break* 15:30 - 17:00 Concurrent Sessions (Sessions 3A & 3B) 17:00 - 17:30 Exhibit Viewing* 17:30 - 18:30 Education Session 4	12:30 - 12:45 Exhibit Viewing* 12:45 - 14:15 Concurrent Sessions (Education Sessions 7A & 7B) 14:15 - 14:30 Exhibit Viewing* 14:30 - 15:30 Hands-On Workshops* *with snacks & coffee* 15:30 - 15:55 Exhibit Viewing & Refreshment Break* 15:55 - 17:30 Education Session 8
Evening	16:00 - 18:00 Cases & Cocktails Discussion Sessions 18:00 - 20:00 Exhibit Viewing Welcome Reception*		18:00 - 19:30 Innovation Celebration*
**Denotes non-CME session*			

Saturday, April 13, 2024: INNOVATION DAY*

Innovation Day is an opportunity for SRS stakeholders to meet with their key opinion leaders and IMAST attendees. This day is to be used for study group meetings, industry educational events, industry education, etc. More information can be found on the IMAST website.

Registration Information

Key Dates

March 11, 2024	Early Registration Rate Closes
March 11, 2024	Cancellation Refund Deadline
March 28, 2024	Pre-registration Closes
April 10-13, 2024	31st IMAST in San Diego, California, USA

For detailed registration information, please visit the IMAST website.

Registration Procedure

SRS encourages online registration. If you forgot your SRS username or password, click here to reset your username or password.

A PDF registration form is available. Download the form here, complete it and return it to meetings@srs.org.

Registration Pricing

Registration Class	Early Registration Rate *On or before March 11, 2024*	Late / On-site Registration *March 12, 2024 - April 13, 2024*
SRS Member - Physician	$900	$1,080
SRS Member - Non-Physician	$450	$540
SRS Emeritus Member	$450	$540
DSPN Member	$900	$1,080
Non-Member Physician	$1,100	$1,320
Non-Member Non-Physician	$550	$660
Resident / Fellow / Medical Student	$450	$540
Delegate from Reduced Rate Country*	$400	$480
Industry Representative	$1,150	$1,380
**Click here for countries that qualify for reduced rate registration.*		

What is Included?

Registration policies are subject to change.

- Entrance to all general and concurrent sessions
- Admission to the industry hands-on workshops
- Meeting materials
- Refreshment breaks and lunch
- Welcome Reception
- Certificate of attendance and CME credits
- Meeting app with ARS capabilities for an interactive meeting experience
- Access to meet face-to-face with exhibitors

Cancellation Policy

Full refunds, less a 10% processing fee, will be granted for the cancellation of meeting registrations until March 11, 2024. **No refunds will be granted after March 11, 2024**. Cancellation and refund requests should be sent in writing via email to meetings@srs.org. Delegates will receive a confirmation email and refund within 14 days of receipt of their cancellation notice.

Questions

For registration questions, please contact the SRS Meetings team at meetings@srs.org.

Scientific Program

**Topics and faculty are preliminary and subject to change*

Wednesday, April, 10, 2024

16:00 - 18:00

Cases & Cocktails 1: Novel Techniques in Complex Thoracolumbar Deformity

Moderator: Gregory M. Mundis Jr., MD
Table Moderators: Michael P. Kelly, MD; Jeffrey Hills, MD; Ferran Pellise, MD, PhD; Sébastien Charosky, MD; Eric O. Klineberg, MD & Venu M. Nemani, MD, PhD

Cases & Cocktails 2: Innovation in Pediatric Deformity (VBT, Apifix, Endoscopic, etc.)

Moderator: Jennifer M. Bauer, MD, MS
Table Moderators: Lindsay M. Andras, MD; Baron S. Lonner, MD; Amer F. Samdani, MD; Stefan Parent, MD, PhD; Mark A. Erickson, MD & Peter O. Newton, MD

Cases & Cocktails 3: Adult and Pediatric Cervical Deformity

Moderator: Joshua M. Pahys, MD
Table Moderators: Christopher P. Ames, MD; Michael Ruf, MD; Camilo A. Molina, MD, FAANS; Ilkka J. Helenius, MD, PhD; Mari L. Groves, MD & Rajiv Iyer, MD

18:00 - 20:00

Welcome Reception*

The 31st IMAST will officially begin with the Welcome Reception, a hosted reception featuring hors d'oeuvres, cocktails and reunions with colleagues and friends and exhibitor viewing.

Available at no charge to in-person meeting delegates, $50 USD for guests of registered delegates.

If you have already registered and would like to add the Innovation Celebration and/or purchase gest tickets(s), you may do so here: IMAST24 Event Tickets

**denotes Non-CME session/event*

Scientific Program

Thursday, April, 11, 2024

08:00 - 09:00

Industry Workshops*

Each Hands-On Workshop will be programmed by a single-supporting company and will feature presentations on topics and technologies selected by the company. CME credits are not available for Hands-On Workshops.

09:00 - 09:30

Refreshment Break & Exhibit Viewing*

09:30 - 11:45

Session 1: Whitecloud Award Nominated Papers

Moderators: Eric O. Klineberg, MD & Per D. Trobisch, MD

09:30 - 09:34 **Paper #1: Rigid Thoracolumbar Orthosis Does Not Improve Outcomes of Acute Adolescent Spondylolysis as Compared with Placebo. Bony Union Predicts Improved Health-Related Quality of Life Outcomes at 2-Year Follow-Up**
Ella Virkki, MD, PhD; Olli T. Pajulo, MD, PhD; Milja Holstila, MD, PhD; Terhi Kolari, MSc; Ilkka J. Helenius, MD, PhD

09:34 - 09:38 **Paper #2: Core Muscle Strengths, Lumbar Flexibility and Quality of Life in Lenke Type 5 AIS Patients Treated with Either Cobb to Cobb VBT Versus Fusion Compared with Healthy Individuals**
Celaleddin Bildik, MD; Selen Saygili; Selmin Arsoy; Hamisi M. Mraja, MD; Baris Peker, MD; Halil Gok, MD; Tunay Sanli, MA; Selhan Karadereler, MD; Meric Enercan, MD; Azmi Hamzaoglu, MD

09:38 - 09:42 **Paper #3: LIV Selection in 'Tweener' Patients Treated with MCGR vs. PSF**
Michael J. Heffernan, MD; Claudia Leonardi, PhD; Brandon Yoshida, MD; Lindsay M. Andras, MD; Tyler Tetreault, MD; Pediatric Spine Study Group; G.Ying Li, MD

09:42 - 09:55 **Discussion**

09:55 - 09:59 **Paper #4: The Hidden Consequences of Advanced Operative Spine Imaging in Children: Increased Lifetime Oncological Risk in Adolescent Idiopathic Scoliosis Patients Treated with Posterior Spinal Fusion Using Intraoperative Computed Tomography & Navigation**
Bram Verhofste, MD; Brendan Striano, MD; Alexander Crawford, MD; Andrew Hresko, MD; Andrew Schoenfeld, MD; Andrew Simpson, MD, MBA, MHS; Daniel J. Hedequist, MD

09:59 - 10:03 **Paper #5: Anterior Scoliosis Correction for the Treatment of Patients with Early Onset Scoliosis**
M. Darryl Antonacci, MD; Janet L. Cerrone, PA-C; Laury A. Cuddihy, MD; Randal R. Betz, MD

10:03 - 10:07 **Paper #6: Radiation-Free Assessment of the 3D Morphology of the Adolescent Scoliotic Spine: A Feasibility Study in Synthetic (S)CT**
Lorenzo Costa, MD; Tijl van der Velden, PhD; Tom Schlosser, MD, PhD; René M. Castelein, MD, PhD; Peter R. Seevinck, PhD

10:07 - 10:20 **Discussion**

10:20 - 10:24 **Paper #7: Pseudotime Analysis Reveals Abnormal Bone Marrow Niche Leads to Reduced Osteogenesis and Chondrogenesis of Bone Marrow Mesenchymal Stem Cells in Adolescent Idiopathic Scoliosis Patients/Mrna-Lncrna-Mirna Network Co-Analysis Reveals Differential Expressed Genes in Bone Marrow Mesenchymal Stem Cells of Adolescent Idiopathic Scoliosis Patients**
Qianyu Zhuang, MD; Yuechuan Zhang, MD; Terry Jianguo Zhang, MD

10:24 - 10:28 **Paper #8: Multi-Segment Growth Guidance Rod can Change Curvature of Spine and Maintain the Growth of Spine in Immature Sheep**
Kai Li, MD; Xuhong Xue, MD, PhD; Sheng Zhao, MD

**denotes Non-CME session/event*

Scientific Program

Thursday, April 11, 2024

10:28 - 10:32 **Paper #9: Development and Validation of an Artificial Intelligence Model to Accurately Predict Spinopelvic Parameters**
Joseph Linzey, MD, MS; Edward Harake, BS; Jaes Jones, MD, MS; Mark Zaki, MD; Zachary Wilseck, MD; Jacob Joseph, MD; Todd Hollon, MD; Paul Park, MD

10:32 - 10:45 **Discussion**

10:45 - 10:49 **Paper #10: Multi-Center Prospective Cohort of Intractable Chronic Low Back Pain Patients Treated with Restorative Neurostimulation - Outcomes from 5-Year Data**
Christopher I. Shaffrey, MD

10:49 - 10:53 **Paper #11: Minimization of Lumbar Interbody Fusion by Percutaneous Full-Endoscopic Lumbar Interbody Fusion (PELIF), and its Minimally Invasiveness Comparison with Minimally Invasive Surgery-Transforaminal Lumbar Interbody Fusion (MIS-TLIF)**
Kenyu Ito, MD

10:53 - 10:57 **Paper #12: Soft-Tissue Insufficiency as a Predictor for Proximal Junctional Kyphosis and Failure in Patients with Adult Spinal Deformity**
Bahar Shahidi, PhD; Pearce Haldeman, BS; Eli O'Brien, BS; Brianna Kuhse, BS; Camille Nosewicz, BS; Courtney Moltzen, BS; Tina L. Iannacone, BSN; Robert K. Eastlack, MD; Gregory M. Mundis Jr., MD

10:57 - 11:10 **Discussion**

11:10 - 11:14 **Paper #13: Minimally Invasive Fusionless Bipolar Fixation: A Six Year Follow Up Surgery Results in Severe Neuromuscular Scoliosis**
Eugenio Dema, MD; Matteo Palmisani, MD; Rosa Palmisani, MD; Lotfi Miladi, MD; Stefano Cervellati, MD

11:14 - 11:18 **Paper #14: Cervical Spinal Cord Signal Changes in the Absence of Apparent Compression Indicate Dynamic Compression - Insights from Load-Bearing Positional Sitting MRI in Patients with Degenerative Cervical Myelopathy**
J. Naresh-Babu, MS

11:18 - 11:22 **Paper #15: Is Upper Extremity or Lower Extremity Function More Important for Patient Satisfaction? An Analysis of 24-Month Outcomes from the QOD Cervical Myelopathy Cohort**
Eunice Yang, BS; Praveen M. Mummaneni MD, MBA; Dean Chou, MD; Mohamad Bydon, MD; Erica F. Bisson MD, MPH; Christopher I. Shaffrey, MD; Oren Gottfried, MD; Anthony L. Asher, MD; Domagoj Coric, MD; Eric A. Potts, MD; Kevin T. Foley, MD; Michael Y Wang, MD; Kai-Ming G. Fu MD, PhD; Michael S. Virk, MD, PhD; John J. Knightly, MD; Scott Meyer, MD; Paul Park, MD; Cheerag D. Upadhyaya MD, MSc; Mark E. Shaffrey, MD; Luis M. Tumialán, MD; Jay D. Turner, MD; Giorgos Michalopoulos, MD; Brandon Sherrod, MD; Regis W. Haid Jr., MD; Andrew Kai-Hong Chung, MD

11:22 - 11:35 **Discussion**

11:35 - 11:40 **Annual Meeting 2024 Preview**
Ferran Pellisé, MD, PhD

11:40 - 11:45 **IMAST 2025 Preview**
Kristen E. Jones, MD & Meric Enercan, MD

11:45 - 12:00

Break & Exhibit Viewing*

12:00 - 13:00

Industry Workshops*

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**denotes Non-CME session/event*

Scientific Program

Thursday, April 11, 2024

13:00 - 13:30

Break & Exhibit Viewing*

13:30 - 15:00

Concurrent Sessions 2A & 2B

Session 2A: Minimally Invasive: Endoscopic to Deformity

Moderators: Dean Chou, MD, & Wilson Z. Ray, MD

13:30 - 13:31 **Introduction**
Dean Chou, MD

13:31 - 13:39 **Eras in Minimally Invasive Spine Surgery**
Michael Y. Wang, MD

13:39 - 13:47 **Awake Tlif**
Praveen V. Mummaneni, MD, MBA

13:47 - 13:55 **Prone Lateral for MIS Deformity**
Juan S. Uribe, MD

13:55 - 14:03 **Endoscopy - Where Are We Now and Where Are We Going**
Christoph P. Hofstetter, MD, PhD

14:03 - 14:08 **Discussion**

14:08 - 14:16 **Limitations of MIS Deformity**
Paul Park, MD

14:16 - 14:24 **Redefining MIS Deformity Algorithm**
Adam S. Kanter, MD

14:24 - 14:32 **Future of Ortho/Neuro Spine Fellowship - One Scheme?**
Michael P. Steinmetz, MD

14:32 - 14:40 **What is Appropriate MIS Spine Surgery for an ASC**
Eric A. Potts, MD

14:40 - 14:45 **Discussion**

14:45 - 14:59 **Debate - L4/5 Spondy with Global Deformity**
Moderator: Charles A. Sansur, MD

Fix the Spondy
Luis M. Tumialán, MD

Fix the Deformity
Christopher I. Shaffrey, MD

14:59 - 15:00 **Conclusion**
Wilson Z. Ray, MD

Session 2B: Artificial Intelligence and New Technology Abstracts

Moderators: Gregory M. Mundis Jr., MD & Ferran Pellisé, MD, PhD

13:30 - 13:34 **Paper #16: A Newly-Designed Wearable Device with Artificial Intelligence Detects Scoliosis and Monitor Disease Progression**
Guilin Chen, MD; Nan Wu, MD; Hongjun Liu, PhD; Chao Yao, PhD; Xiaojuan Ban, PhD; Terry Jianguo Zhang, MD

13:34 - 13:38 **Paper #17: Are 3D-Printed Anatomic Haptic Adolescent Idiopathic Scoliosis Spine Models Better Resident Training Tools when Compared to Conventional Training Modalities**
Selina C. Poon, MD; Haleh Badkoobehi, MD; Cynthia V. Nguyen, MD; Robert H. Cho, MD; Ryan Finkel, MD; Reginald S. Fayssoux, MD

**denotes Non-CME session/event*

Scientific Program

Thursday, April 11, 2024

13:38 - 13:42 **Paper #18: Rigo Cheneau Brace for Adolescent Idiopathic Scoliosis: Higher in Brace Correction and Lower Rates of Curve Progression**
Lisa Bonsignore-Opp, MD; Ritt Givens, BS; Rajiv Iyer, MD; Hiroko Matsumoto, PhD; Nicole Bainton, CPNP; Benjamin D. Roye, MD, MPH; Michael G. Vitale, MD, MPH

13:42 - 13:52 **Discussion**

13:52 - 13:56 **Paper #19: Optical-Kinematic Measurement of Spinal Alignment: A Radiation-Free Technique Using Light Field Navigation**
Steven D. Glassman, MD; Erica F. Bisson, MD, MPH; Sigurd H. Berven, MD; Charles Fisher, MD, FRCS(C); Catherine Olinger, MD; Kosei Nagata, MD, PhD; Timothy Chryssikos, MD, PhD; Rafid Kasir, MD; Arun Tirumalai, PhD; David Fiorella, MS; José Gaviria, MS

13:56 - 14:00 **Paper #20: Comparative Analysis of Utilization of Artificial Intelligence in Minimally-Invasive Adult Spinal Deformity Surgery**
M. Burhan Janjua, MD; Peter Tretiakov, BS; Jamshaid Mir, MD; Pooja Dave, BS; Ankita Das, BS; Bailey Imbo, BA; Oluwatobi O. Onafowokan, MBBS, MS; Matthew Galetta, MD; Nathan Lorentz, MD; Stephane Owusu-Sarpong, MD; Justin S. Smith, MD, PhD; Pawel Jankowski, MD; Bassel G. Diebo, MD; Shaleen Vira, MD; Praveen V. Mummaneni, MD, MBA; Robert K. Eastlack, MD; Dean Chou, MD; Paul Park, MD; Rohan Desai, MD; Peter G. Passias, MD

14:00 - 14:04 **Paper #21: Development of an AI Algorithm for Automatic Cobb Angle Measurement in Spinal Deformities - Comparison of Accuracy Among Three Groups of Teaching Data with Deferent Diseases**
Shuzo Kato, MD; Takeo Nagura, MD, PhD; Yoshihiro Maeda, MD; Morio Matsumoto, MD, PhD; Masaya Nakamura, MD, PhD; Kota Watanabe, MD, PhD

14:04 - 14:14 **Discussion**

14:14 - 14:18 **Paper #22: Automatic Prediction of Spinopelvic Parameters from Bi-Planar Radiographs**
Stefan Lang, MS; Kim Ji Hyun, BS; Moritz Jokeit, MS; Frederic Cornaz, MD; Lukas Urbanschitz, MD; Carlos Torrez, MD; Jess Snedeker, PhD; Mazda Farshad, MD, MPH; Jonas Widmer, MSc

14:18 - 14:22 **Paper #23: Leveraging Image Augmentations to Accurately Predict Spinopelvic Parameters in Lumbosacral X-Rays Using a Whole-Spine Artificial Intelligence Model**
Edward Harake, BS; Joseph Linzey, MD, MS; Jaes Jones, MD, MS; Mark Zaki, MD; Zachary Wilseck, MD; Jacob Joseph, MD; Siri S. Khalsa, MD; Todd Hollon, MD; Paul Park, MD

14:22 - 14:26 **Paper #24: Concurrent Radiographic Exam and Bone Mineral Density Assessments in an Upright Stereoradiography System: An Emerging Technology**
Saba Pasha, PhD; Darryl Lau, MD; Christopher I. Shaffrey, MD

14:26 - 14:36 **Discussion**

14:36 - 14:40 **Paper #25: Safety Data for Robotics Coupled with Navigation for Pediatric Spine Surgery: Initial Intraoperative Results of a Prospective Multicenter Registry**
Nicole Welch, BA; Alexa P. Bosco, BA; Jeffrey M. Henstenburg, MD; Craig M. Birch, MD; Grant D. Hogue, MD; M. Timothy Hresko, MD; Mark A. Erickson, MD; Roger F. Widmann, MD; Jessica H. Heyer, MD; Kirsten E. Ross, MD; Robert F. Murphy, MD; Dennis P. Devito, MD; Daniel J. Hedequist, MD

14:40 - 14:44 **Paper #26: Analysis of 5,525 Consecutive Pedicle Screws Placed Utilizing Robotically-Assisted Surgical Navigation: Surgical Safety and Early Complications**
Roger F. Widmann, MD; Jenna L. Wisch, BS; Colson P. Zucker, BA; Olivia Tracey, BA; Tyler Feddema; Florian Miller; Gabriel S. Linden, BA; Mark A. Erickson, MD; Jessica H. Heyer, MD

**denotes Non-CME session/event*

Scientific Program

Thursday, April 11, 2024

14:44 - 14:48 **Paper #27: Assessing the Reproducibility of the Structured Abstracts Generated by ChatGPT and Bard Compared to Human-Written Abstracts in the Field of Spine Surgery: A Comparative Analysis of Scientific Abstracts Between Artificial Intelligence and Human**
Dong-Gune Chang, MD, PhD; Hong Jin Kim, MD; Jae Hyuk Yang, MD, PhD; Lawrence G. Lenke, MD; Javier Pizones, MD, PhD; René M. Castelein, MD, PhD; Kota Watanabe, MD, PhD; Per D. Trobisch, MD; Gregory M. Mundis Jr., MD; Seoung Woo Suh, MD, PhD; Se-Il Suk, MD, PhD

14:48 - 15:00 **Discussion**

15:00 - 15:30

Refreshment Break & Exhibit Viewing*

15:30 - 17:00

Concurrent Sessions 3A & 3B

Session 3A: Next Generation Technology in Adult Spinal Deformity: Pitfalls and Complications

Moderators: Ronald A. Lehman Jr., MD, & Corey T. Walker, MD

15:30 - 15:32 **Introduction**
Ronald A. Lehman Jr., MD

15:32 - 15:41 **Why Robotics/Navigation Has Changed My MIS Deformity Practice**
Corey T. Walker, MD

15:41 - 15:50 **Lessons Learned from Robotics Gone Wrong**
Joseph M. Lombardi, MD

15:50 - 16:00 **Discussion**

16:00 - 16:09 **How AI and Pre-Bent Rods Have Changed My Deformity Planning and Treatment**
Ronald A. Lehman, MD

16:09 - 16:18 **Limitations of AI Planning for MIS Deformity Surgery, We Still Have a Way to Go**
Neel Anand, MD

16:18 - 16:28 **Discussion**

16:28 - 16:37 **Prone Transpsoas Lateral Fusion Has Made Me a More Versatile Deformity Surgeon**
Rodrigo A. Amaral, MD

16:37 - 16:46 **Downfalls of Lateral MIS Deformity Surgery: How to Identify the Best Patient**
Gregory M. Mundis Jr., MD

16:46 - 16:56 **Discussion**

16:56 - 17:00 **Conclusion**
Corey T. Walker, MD

Session 3B: Pediatric and Adult Innovation Abstracts

Moderators: Kota Watanabe, MD, PhD & Brian Hsu, MD

15:30 - 15:34 **Paper #28: 4.5 mm Molybdenum-Rhenium (MoRe®) Rods Use in Adult Spinal Deformity Have a 0% Incidence of Rod Fractures at 2-Year Follow-Up: A Multicenter Retrospective Review**
Stephen Enguidanos, MD; Kevin Ammar, MD; Kornelis A. Poelstra, MD; Jason Cormier, MD; Stephen Scibelli, MD; Matthew McGirt, MD; Michael S. Chang, MD; Dave Seecharan, MD; Yi-Ren Chen, MD; Ankit I. Mehta, MD; Han Jo Kim, MD

15:34 - 15:38 **Paper #29: Short Posterior Spinal Fusion and Preventive Methods for Proximal Junctional Kyphosis in Adult Spinal Deformity**
Jung-Hee Lee, MD, PhD; Ki Young Lee, MD, PhD; Kyung-Chung Kang, MD, PhD; Won Young Lee, MD; Seong Jin Cho, MD; Cheol-Hyun Jung, MD; Gil Han, MD; Hong-Sik Park, MD; Woo-Jae Jang, MD; Min-Jeong Park, RN

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Thursday, April 11, 2024

15:38 - 15:42 **Paper #30: Preoperative Radiographic Parameters Versus 24-Month Clinical Success in Decompression and Dynamic Sagittal Tether or TLIF for Degenerative Spondylolisthesis**
Todd Alamin, MD; William F. Lavelle, MD; Louis C. Fielding, MD; Javier Castro, MD; Serena S. Hu, MD

15:42 - 15:52 **Discussion**

15:52 - 15:56 **Paper #31: Radiographic Analysis of Early Changes in Upper Adjacent Segments After Fusion Surgery: OLIF vs. PLIF**
JooYoung Lee, MD; Jae Hwan Cho, MD, PhD; Sehan Park, MD; Chang Ju Hwang, MD, PhD; Dong-Ho Lee, MD, PhD

15:56 - 16:00 **Paper #32: One-Third of Surgical Adult Spinal Deformity (ASD) Patients are Consuming Opioids Pre- and Postoperatively with Significant International Differences: This is a Cultural Issue**
Brett Rocos, MD; Juan Sardi, MD; Jeffrey L. Gum, MD; Anastasios Charalampidis, MD; Stephen J. Lewis, MD, FRCS(C)

16:00 - 16:04 **Paper #33: Single-Level ALIF/lLIF and TLIF are Associated with Identical Rates of All-Cause Subsequent Lumbar Surgery**
Nakul Narendran, BS; Paal K. Nilssen, BS; David L. Skaggs, MD, MMM; Alexander Tuchman, MD

16:04 - 16:14 **Discussion**

16:14 - 16:18 **Paper #34: Incidence of Revision Surgery Within Five Years of the Index Procedure for Grade 1 Spondylolisthesis: An Analysis from the QOD Spondylolisthesis Data/The Impact of Revisions on 5-Year Proms: an Analysis from The Qod Spondylolisthesis Data/Incidence of Revision Surgery Within Five Years of The Index Procedure for Grade 1 Spondylolisthesis: an Analysis from The Qod Spondylolisthesis Data**
Jacob Birlingmair, MD; Steven D. Glassman, MD; Mladen Djurasovic, MD; Leah Y. Carreon, MD; Andrew K. Chan, MD; Erica F. Bisson, MD, MPH; Mohamad Bydon, MD; Kevin T. Foley, MD; Christopher I. Shaffrey, MD; Eric A. Potts, MD; Mark E. Shaffrey, MD; Domagoj Coric, MD; John J. Knightly, MD; Paul Park, MD; Michael Y. Wang, MD; Kai-Ming G. Fu, MD, PhD; Jonathan R. Slotkin, MD; Anthony L. Asher, MD; Michael S. Virk, MD, PhD; Dean Chou, MD; Vivian Le, MPH; Regis W. Haid Jr., MD; Praveen V. Mummaneni, MD, MBA
**Author list subject to adjustment during combination process*

16:18 - 16:22 **Paper #35: Lumbar Vertebral Body Tethering: Single Center Outcomes and Reoperations in a Consecutive Series of 106 Patients**
Alan Stein, MD; Amer F. Samdani, MD; Alexander J. Schupper, MD; Zan Naseer, MD; Ronit Shah, BS; Sabrina Zeller, MD; Joshua M. Pahys, MD; Solomon Samuel, D. Eng.; Alejandro Quinonez, BS; Steven W. Hwang, MD

16:22 - 16:26 **Paper #36: Effects of Natural Standing on Biomechanical and Diffusion Properties of Unfused Lumbar Intervertebral Discs in AIS Patients 5 Years After Fusion. A Serial MRI Post Contrast Diffusion Study in Supine and Standing.**
J. Naresh-Babu, MS

16:26 - 16:36 **Discussion**

16:36 - 16:40 **Paper #37: Improvement in Axial Rotation with Bracing Reduces Risk of Curve Progression in Patients with Adolescent Idiopathic Scoliosis**
Michael Fields, MD; Christina C. Rymond, BA; Matan Malka, BA; Ritt Givens, BS; Matthew Simhon, MD; Hiroko Matsumoto, PhD; Gerard F. Marciano, MD; Afrain Z. Boby, MS, BS; Benjamin D. Roye, MD, MPH; Michael G. Vitale, MD, MPH

16:40 - 16:44 **Paper #38: Initial Outcomes of Posterior Dynamic Distraction Device Compared to Vertebral Body Tethering for Adolescent Idiopathic Scoliosis**
A. Noelle Larson, MD; Julia Todderud, BS; Geoffrey F. Haft, MD; Ron El-Hawary, MD; John T. Anderson, MD; Ryan E. Fitzgerald, MD; Timothy Oswald, MD; Gilbert Chan, MD; Baron S. Lonner, MD; Michael C. Albert, MD; Dan Hoernschemeyer, MD; Todd A. Milbrandt, MD, MS

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16:44 - 16:48 **Paper #39: Tissue Response Following Implantation with the Posterior Dynamic Distraction Device in Adolescent Idiopathic Scoliosis**
Olivia K. Richard, DVM; Aléthéa Liens, PhD; DesiRae Muirhead, MD; Ron El-Hawary, MD; Klaus Weber, PhD

16:48 - 17:00 **Discussion**

17:00 - 17:30

Refreshment Break & Exhibit Viewing*

17:30 - 18:30

Session 4: Enabling Technologies in Spine Surgery: Are We Ignoring Patient Safety with Quick Adoption?

Moderators: Ferran Pellisé, MD, PhD, & Rajiv K. Sethi, MD

17:30 - 17:35 **Enabling Technologies: What to Do when Things Go Bad**
Rajiv K. Sethi, MD

17:35 - 17:40 **Robotics in Spine Surgery: What's Next? Are There Safety Concerns?**
Brandon B. Carlson, MD, MPH

17:40 - 17:45 **How Do We Measure Intra-Operative Failure of CT Based Navigation, Robotics, or Augmented Reality Technology?**
Jesse Shen, MD, PhD

17:45 - 17:50 **Discussion**

17:50 - 17:55 **Tips and Tricks: How Do I Notice Inaccuracy Before It's Too Late?**
Phillip K. Louie, MD

17:55 - 18:00 **When Should I Rely on Enabling Technologies?**
Ferran Pellisé, MD, PhD

18:00 - 18:05 **When Should I Not Rely on Enabling Technologies?**
Eric O. Klineberg, MD

18:05 - 18:10 **Implementation of New Enabling Technologies and How Not to Fall Behind**
David L. Skaggs, MD, MMM

18:10 - 18:15 **Discussion**

18:15 - 18:30 **Panel Discussion: How Do We Discuss Major Complications Associated with Enabling Technology Openly with Industry and Educate Surgeons at the Same Time?**
Mark A. Erickson, MD, Ronald A. Lehman, MD, Lawrence G. Lenke, MD, Ferran Pellisé, MD, PhD, & David W. Polly Jr., MD

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Scientific Program

Friday, April, 12, 2024

07:30 - 08:45

Concurrent Sessions 5A, 5B, 5C & 5D

Session 5A: Pediatric Scoliosis Abstracts

Moderators: Michael P. Kelly, MD & Barron S. Lonner, MD

07:30 - 07:34 **Paper #40: Behavior of the Un-Instrumented Lumbar Curve Following Selective Thoracic Tether**
Ritt Givens, BS; Christina C. Rymond, BA; Firoz Miyanji, MD; Juan Carlos Rodriguez-Olaverri, MD; Kevin Smit, MD; Ron El-Hawary, MD; Stefan Parent, MD, PhD; Walter H. Truong, MD, FRCS(C); Benjamin D. Roye, MD, MPH; Michael G. Vitale, MD, MPH; Pediatric Spine Study Group

07:34 - 07:38 **Paper #41: The Fate of the Broken Tether: How Do Curves Treated with Vertebral Body Tethering (VBT) Behave After Tether Breakage?**
Tyler Tetreault, MD; Tiffany N. Phan; Tishya Wren, PhD; Michelle C. Welborn, MD; John T. Smith, MD; Ron El-Hawary, MD; Kenneth M. Cheung, MD, MBBS, FRCS; Kenneth D. Illingworth, MD; David L. Skaggs, MD, MMM; Pediatric Spine Study Group; Lindsay M. Andras, MD

07:38 - 07:42 **Paper #42: Outcomes in Patients with Tether Rupture After Anterior Vertebral Tethering for Adolescent Idiopathic Scoliosis: The Good, The Bad, and The Ugly**
John T. Braun, MD; Sofia Federico; David F. Lawlor, MD; Brian E. Grottkau, MD

07:42 - 07:52 **Discussion**

07:52 - 07:56 **Paper #43: Which Lenke Type Curve is Most Appropriate for Vertebral Body Tethering in Adolescent Idiopathic Scoliosis?**
Abel De Varona Cocero, BS; Camryn Myers, BA; Fares Ani, MD; Constance Maglaras, PhD; Themistocles S. Protopsaltis, MD; Juan Carlos Rodriguez-Olaverri, MD

07:56 - 08:00 **Paper #44: Minimum 5-Years Follow-Up Results of Thoracoscopic Vertebral Body Tethering**
Ahmet Alanay, MD; Altug Yucekul, MD; Kadir Abul, MD; Ilkay Karaman, MD; Atahan Durbas; Tais Zulemyan, MSc; Gokhan Ergene, MD; Sahin Senay, MD; Sule Turgut Balci, MD; Yasemin Yavuz, PhD; Caglar Yilgor, MD

08:00 - 08:04 **Paper #45: What Predicts a Successful Result for Vertebral Body Tethering?**
Julia Todderud, BS; Todd A. Milbrandt, MD, MS; D. Dean Potter, MD; A. Noelle Larson, MD

08:04 - 08:08 **Paper #46: The Link Between a Growth Mindset and Health-Related Quality of Life in AIS Patients on Brace Treatment**
Joelle L. Wang, MPsych(Clinical); Nicole Lee, PhD; Matilda Kwek, MD; Kevin B. Lim, MD, FRCS(Orth), MBA

08:08 - 08:18 **Discussion**

08:18 - 08:22 **Paper #47: Changes in Diaphragm Intrusion and Thoracic Dimensions After Posterior Spinal Fusion in Patients with Neuromuscular Scoliosis**
Gregory Benes, BS; Peter G. Gabos, MD; Gregory Redding, MD; Joann Hunsberger, MD; Patrick J. Cahill, MD; Harms Study Group; Paul D. Sponseller, MD, MBA

08:22 - 08:26 **Paper #48: Intra-Operative Skin Traction in Posterior Spinal Fusion for Non-Ambulatory Pediatric Scoliosis**
Grace H. Coughlin, BS; Suken A. Shah, MD; Jennifer M. Bauer, MD, MS

08:26 - 08:30 **Paper #49: Documenting the Variation of Proximal Foundation Constructs and Their Correlation with Unplanned Return to the Operating Room in Children with Magnetically Controlled Growing Rods**
Bahar Shahidi, PhD; Fernando Rios, MD; Hazem B. Elsebaie, MD, FRCS; Bailee Monjazeb, BA; William Kerr, BS; Joshua M. Pahys, MD; Steven W. Hwang, MD; Amer F. Samdani, MD; Lindsay M. Andras, MD; Matthew E. Oetgen, MD; Peter O. Newton, MD; Burt Yaszay, MD; Peter F. Sturm, MD; Michael G. Vitale, MD, MPH; Paul D. Sponseller, MD, MBA; Gregory M. Mundis Jr., MD; Behrooz A. Akbarnia, MD; Pediatric Spine Study Group

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Scientific Program

Friday, April, 12, 2024

08:30 - 08:34 **Paper #50: The Role of Enabling Technology in Growth-Friendly Spine Surgery**
Daniel Gabriel, BS; Sydney Lee, BA; Shanika De Silva, PhD, MS; Daniel J. Hedequist, MD; Craig M. Birch, MD; Brian D. Snyder, MD, PhD; M. Timothy Hresko, MD; Grant D. Hogue, MD

08:34 - 08:45 **Discussion**

Session 5B: Lumbar Degenerative Abstracts

Moderators: Phillip Louie, MD & Jason Bernard, MD, MBBS, FRCS(Orth)

07:30 - 07:34 **Paper #51: Comparison of Unilateral versus Bilateral Pedicle Screw Fixation (U/BPSF- TLIF) Transforaminal Lumbar Interbody Fusion in Lumbar Degenerative Disorders- An Analysis of 1098 Cases**
Vigneshwara M. Badikillaya, MD; Sharan T. Achar, MS; Sajan K. Hegde, MD

07:34 - 07:38 **Paper #52: Lumbar Disc Arthroplasty Leads to Increased Subsequent Facet Injections Compared to Anterior Lumbar Interbody Fusion, and the Difference Worsens over Time**
Nakul Narendran, BS; Paal K. Nilssen, BS; Christopher Mikhail, MD; David L. Skaggs, MD, MMM

07:38 - 07:42 **Paper #53: Performance Comparison Between Hounsfield Units and Dexa in Predicting Lumbar Interbody Cage Subsidence After Circumferential Lumbar Fusion**
Kirsten A. Schuler, BS; Lindsay D. Orosz, MS, PA-C; Tarek Yamout, MD; Brandon J. Allen; Wondwossen T. Lerebo, PhD; Rita T. Roy, MD; Thomas C. Schuler, MD; Christopher R. Good, MD; Colin M. Haines, MD; Ehsan Jazini, MD

07:42 - 07:52 **Discussion**

07:52 - 07:56 **Paper #54: Outcomes of Minimally Invasive Decompression Alone versus Fusion in Patients with Predominant Back Pain**
Pratyush Shahi, MBBS, MS; Tejas Subramanian, BS; Omri Maayan, BS; Nishtha Singh, BS; Sumedha Singh, MBBS, MD; Chad Simon, BS; Kasra Araghi, BS; Avani S. Vaishnav, MBBS; Tomoyuki Asada, MD; Olivia Tuma, BS; Eric Mai, BS; Yeo Eun Kim, BS; Joshua Zhang, BS; Cole Kwas, BS; Max Korsun, BS; Myles Allen, MBchB; Eric Kim, BS; James E. Dowdell, MD; Evan D. Sheha, MD; Sravisht Iyer, MD; Sheeraz Qureshi, MD

07:56 - 08:00 **Paper #55: Hypertension and High Post-Operative Diastolic Pressure Shown to Be Significant Risk Factors in Onset of Postoperative Lumbar Epidural Hematoma**
Samuel Ezeonu, BA; Juan Rodriguez Rivera, BS; Alyssa Capasso, BS; Nicholas Vollano, MBS; Constance Maglaras, PhD; Tina Raman, MD

08:00 - 08:04 **Paper #56: Effects of Anti-Osteoporotic Therapies on Lumbar Interbody Fusion in Postmenopausal Osteoporotic Females**
Lei Kuang, MD

08:04 - 08:08 **Paper #57: Commonly Used Patient-Reported Outcome Measures (PROMS) Do Not Adequately Reflect Patient-Perceived Changes in Health Status Following Lumbar Decompression**
Avani S. Vaishnav, MBBS; Jung Mok, MD; Eric Mai, BS; Kasra Araghi, BS; Myles Allen, MBchB; Cole Kwas, BS; Tomoyuki Asada, MD; Nishtha Singh, BS; Chad Simon, BS; Yeo Eun Kim, BS; Olivia Tuma, BS; Joshua Zhang, BS; Max Korsun, BS; Eric Kim, BS; Sravisht Iyer, MD; Sheeraz Qureshi, MD

08:08 - 08:18 **Discussion**

08:18 - 08:22 **Paper #58: Review of Intraoperative Management and Outcomes of Incidental Durotomy in Minimally Invasive Spine Surgery**
Chad Simon, BS; Jung Mok, MD; Tomoyuki Asada, MD; Kasra Araghi, BS; Eric Mai, BS; Olivia Tuma, BS; Max Korsun, BS; Avani S. Vaishnav, MBBS; Yeo Eun Kim, BS; Joshua Zhang, BS; Cole Kwas, BS; Myles Allen, MBchB; Nishtha Singh, BS; Eric Kim, BS; Sheeraz Qureshi, MD; Sravisht Iyer, MD

08:22 - 08:26 **Paper #59: Vancomycin Efficacy in Reducing Surgical Site Infection in Posterior Spinal Fusion Surgery**
Aditya Joshi, BS; James Baber, MBChB, MPH; Amit Jain, MD; Khaled M. Kebaish, MD; Hamid Hassanzadeh, MD

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08:26 - 08:30 **Paper #60: Factors Associated with Long-Term Deterioration in Back Pain After Surgical Treatment for Low-Grade Lumbar Spondylolisthesis at 2 and 5 Years: An Evaluation from the QOD Spondylolisthesis Data**
Shawn Adams, MD; Steven D. Glassman, MD; Leah Y. Carreon, MD; Mohamad Bydon, MD; Andrew K. Chan, MD; Erica F. Bisson, MD, MPH; Kevin T. Foley, MD; Christopher I. Shaffrey, MD; Eric A. Potts, MD; Mark E. Shaffrey, MD; Domagoj Coric, MD; John J. Knightly, MD; Paul Park, MD; Michael Y. Wang, MD; Kai-Ming G. Fu, MD, PhD; Jonathan R. Slotkin, MD; Anthony L. Asher, MD; Michael S. Virk, MD, PhD; Panagiotis Kerezoudis, MD, MS; Jian Guan, MD; Dean Chou, MD; Regis W. Haid Jr., MD; Vivian Le, MPH; Praveen V. Mummaneni, MD, MBA

08:30 - 08:34 **Paper #61: Predictors of Oswestry Disability Index (ODI) Deterioration at 5 Years After Surgery for Grade 1 Spondylolisthesis: A QOD Study**
Christine Park, MD; Deb Bhowmick, MD; Christopher I. Shaffrey, MD; Erica F. Bisson, MD, MPH; Anthony L. Asher, MD; Domagoj Coric, MD; Eric A. Potts, MD; Kevin T. Foley, MD; Michael Y. Wang, MD; Kai-Ming G. Fu, MD, PhD; Michael S. Virk, MD, PhD; John J. Knightly, MD; Scott Meyer, MD; Paul Park, MD; Cheerag D. Upadhyaya, MSc; Mark E. Shaffrey, MD; Luis M. Tumialán, MD; Andrew K. Chan, MD; Dean Chou, MD; Regis W. Haid Jr., MD; Praveen V. Mummaneni, MD, MBA; Mohamad Bydon, MD; Oren Gottfried, MD

08:34 - 08:45 **Discussion**

Session 5C: Adult Spinal Deformity Abstracts

Moderators: Rajiv K. Sethi, MD & Ronald A. Lehman Jr., MD

07:30 - 07:34 **Paper #62: Fused Spinopelvic Angles: Determining the Overcorrection Threshold to Prevent Proximal Junctional Kyphosis**
Jung-Hee Lee, MD, PhD; Ki Young Lee, MD, PhD; Kyung-Chung Kang, MD, PhD; Won Young Lee, MD; Seong Jin Cho, MD; Gil Han, MD; Cheol-Hyun Jung, MD; Hong-Sik Park, MD; Woo-Jae Jang, MD; Min-Jeong Park, RN

07:34 - 07:38 **Paper #63: Normalized Total Psoas Area Predicts Early Postoperative Mobility and Perioperative Complications After Complex Adult Spinal Deformity Surgery**
Takashi Hirase, MD; Myles Allen, MBchB; Chukwuebuka Achebe, BS; Hiroyuki Nakarai, MD; Han Jo Kim, MD; Francis C. Lovecchio, MD

07:38 - 07:42 **Paper #64: Forward Global Sagittal Alignment of the Cranium Relative to the Hips Drives Surgical Complexity and is Associated with a More Adverse Perioperative Course**
Christopher Lai, BS; Sarthak Mohanty, BS; Fthimnir Hassan, MPH; Caroline Taber, BS; Jaques Williams, MD; Nathan J. Lee, MD; Joseph M. Lombardi, MD; Zeeshan M. Sardar, MD; Ronald A. Lehman, MD; Lawrence G. Lenke, MD

07:42 - 07:52 **Discussion**

07:52 - 07:56 **Paper #65: Can Patient Specific Precontoured Rod Instrumentation Reduce the Rate of Proximal Junctional Kyphosis for Adult Spinal Deformity? A Propensity Score Matched Analysis.**
Michael Fields, MD; Nathan J. Lee, MD; Mark Herbert, BS; Gabriella Greisberg, BS; Matan Malka, BA; Cole Morrissette, MS; Zeeshan M. Sardar, MD; Lawrence G. Lenke, MD; Joseph M. Lombardi, MD; Ronald A. Lehman, MD

07:56 - 08:00 **Paper #66: Post-Operative Hyperextension Bracing Has the Potential to Reduce PJK: A Propensity Matched Analysis of Braced Versus Non-Braced Cohorts**
Robert K. Merrill, MD; Francis C. Lovecchio, MD; Bo Zhang, BS; John C. Clohisy, MD; Anthony Pajak, BS; Jerry Y. Du, MD; Gregory Kazarian, MD; Austin Kaidi, MSc; Rachel L. Knopp, MPH; Izzet Akosman, BS; Jonathan Elysee, MS; Justin Samuel, BS; Hiroyuki Nakarai, MD; Alex Dash, BS; Kasra Araghi, BS; Han Jo Kim, MD

08:00 - 08:04 **Paper #67: Utility of Computerized Tomography Hounsfield Unit Measurements to Predict Proximal Junctional Kyphosis in Adult Spinal Deformity Patients with Long Constructs**
Josephine R. Coury, MD; Justin Reyes, MS; Gabriella Greisberg, BS; Matan Malka, BA; Joseph M. Lombardi, MD; Lawrence G. Lenke, MD; Ronald A. Lehman, MD; Zeeshan M. Sardar, MD

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08:04 - 08:08 **Paper #68: Intraosseous Injection of Bone Morphogenetic Protein-2 at the Uppermost Instrumented Vertebra for Prevention of Proximal Junctional Kyphosis Following Long Segment Fusion in Adult Spinal Deformity: A Preliminary Report**
Jung-Hee Lee, MD, PhD; Ki Young Lee, MD, PhD; Kyung-Chung Kang, MD, PhD; Won Young Lee, MD; Seong Jin Cho, MD; Gil Han, MD; Cheol-Hyun Jung, MD; Hong-Sik Park, MD; Woo-Jae Jang, MD; Min-Jeong Park, RN

08:08 - 08:18 **Discussion**

08:18 - 08:22 **Paper #69: Does the New Lenke Modular Radiographic Classification of Adult Idiopathic Scoliosis (ADIS) Reliably Dictate Preferred Treatment?**
Christopher Mikhail, MD; Fthimnir Hassan, MPH; Andrew Platt, MD; Stephen Stephan, MD; Gerard F. Marciano, MD; Lawrence G. Lenke, MD

08:22 - 08:26 **Paper #70: Radiological Features and Postoperative Outcomes in Patients of Degenerative Lumbar Scoliosis with Pelvic Obliquity: The Application of an Novel Classification**
Junyu Li, MD; Xie Bowen, MD; Zhuoran Sun, MD; Yongqiang Wang, MD; Miao Yu, MD; Yan Zeng, MD; Weishi Li, MD

08:26 - 08:30 **Paper #71: Detecting Perioperative Body Composition Changes in Elective Spine Surgery Through Bioimpedance Analysis**
Alex Coffman, BS; Catherine Olinger, MD; Cassim Igram, MD; Sarah Ryan, MD

08:30 - 08:34 **Paper #72: A Regularized Linear Regression Equation Predicts Cranial SVA-Hip Alignment Without Full Body Radiographs**
Sarthak Mohanty, BS; Fthimnir Hassan, MPH; Christopher Lai, BS; Christopher Mikhail, MD; Stephen Stephan, MD; Andrew Platt, MD; Joshua Bakhsheshian, MD; Zeeshan M. Sardar, MD; Joseph M. Lombardi, MD; Lawrence G. Lenke, MD

08:34 - 08:45 **Discussion**

Session 5D: Cervical Degenerative/Deformity Abstracts

Moderators: David M. Sciubba, MD, MBA & Qianyu Zhuang, MD

07:30 - 07:34 **Paper #73: Novel Risk Factors and a Radiological Predictor Model for the Progression of Proximal Junctional Kyphosis in Osteoporotic Vertebral Compression Fracture with Kyphosis Following Posterior Corrective Surgery**
Junyu Li, MD; Yinghong Ma, MD; Junjie Ma, MD; Zhuoran Sun, MD; Yongqiang Wang, MD; Miao Yu, MD; Weishi Li, MD; Yan Zeng, MD

07:34 - 07:38 **Paper #74: Guttering Osteotomy for Removal of Retro-Corporeal Compressive Pathology During Anterior Cervical Discectomy and Fusion**
Dong-Ho Lee, MD, PhD; Chang Ju Hwang, MD, PhD; Jae Hwan Cho, MD, PhD; Sehan Park, MD

07:38 - 07:42 **Paper #75: Intraoperative C2 Slope Thresholds for Optimal Functional & Clinical Outcomes in Cervical Deformity Correction**
Peter Tretiakov, BS; Pooja Dave, BS; Jamshaid Mir, MD; Ankita Das, BS; Stephane Owusu-Sarpong, MD; Matthew Galetta, MD; Nathan Lorentz, MD; Oluwatobi O. Onafowokan, MBBS, MS; Justin S. Smith, MD, PhD; M. Burhan Janjua, MD; Bassel G. Diebo, MD; Peter G. Passias, MD; Paul Park, MD; Rohan Desai, MD; Renaud Lafage, MS; Virginie Lafage, PhD

07:42 - 07:52 **Discussion**

07:52 - 07:56 **Paper #76: Range of Horizontal Gaze Following Multilevel Posterior Cervical Fusion Across the Cervicothoracic Junction**
Clayton Hoffman, BS; Michael Nocek, BA; Zohaib Sherwani, MD; Vikas V. Patel, MD; Shahbaaz Sabri, MD; David C. Ou-Yang, MD; Christopher J. Kleck, MD

07:56 - 08:00 **Paper #77: Utility of Pre-Flip Intraoperative Neurophysiologic Monitoring Baselines for Posterior Decompression and Fusion for Cervical Spondylotic Myelopathy**
Nora Kim, MD; Zoran Budimlija, PhD; Karl Sangwon, BS; Austin Feng, MD; Themistocles S. Protopsaltis, MD; Darryl Lau, MD

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08:00 - 08:04 **Paper #78: Impact of Enhanced Recovery After Surgery (ERAS) Program on Post-Operative Course in Adult Cervical Deformity Patients**
Peter Tretiakov, BS; Ankita Das, BS; Jamshaid Mir, MD; Matthew Galetta, MD; Nathan Lorentz, MD; Oluwatobi O. Onafowokan, MBBS, MS; Pooja Dave, BS; Stephane Owusu-Sarpong, MD; Rohan Desai, MD; Djani Robertson, MD; Jared C. Tishelman, MD; Bassel G. Diebo, MD; Peter G. Passias, MD; Pawel Jankowski, MD

08:04 - 08:08 **Paper #79: Incorporation of Frailty Based Realignment Target Goals for Cervical Deformity Surgery in Adults Can Mitigate Mechanical Complications and Improve Perioperative Course**
Jamshaid Mir, MD; Pooja Dave, BS; Peter Tretiakov, BS; Oluwatobi O. Onafowokan, MBBS, MS; Ankita Das, BS; Nathan Lorentz, MD; Matthew Galetta, MD; Stephane Owusu-Sarpong, MD; Tyler K. Williamson, MS, BS; Peter G. Passias, MD

08:08 - 08:18 **Discussion**

08:18 - 08:22 **Paper #80: Microbiome Study of Cervical Disc Using Next Generation Sequencing**
Saumyajit Basu, MS(orth), DNB(orth), FRCSEd; Piyush Joshi, MS(Orthopaedics)

08:22 - 08:26 **Paper #81: The Clinical Impact on Range of Motion for Occipito- and Sub-Axial Cervical Fusion: A Comprehensive Guide Based on over 1000 Motion Segments**
S. Harrison Farber, MD; Anna 0. Sawa, MS; Joseph DiDomenico, MD; Luke Mugge, MD; Alexis Ratliff, MS; Temesgen Assefa, MD; Juan S. Uribe, MD; Jay D. Turner, MD; Brian P. Kelly, PhD

08:26 - 08:30 **Paper #82: Decreased Hounsfield Unit Measurements Are Associated with Cervical Corpectomy Subsidence More than Other Measures of Bone Mineral Density**
Steven J. Girdler, MD; Hannah Levy, MD; James Bernatz, MD; Caden Messer, BS; Andrew Pumford, BS; Matt Lindsey, MD; Brian Goh, MD; Anthony L. Mikula, MD; Mohammed Karim, MD; Peter S. Rose, MD; Bradford L. Currier, MD; Arjun Sebastian, MD; Brett A. Freedman, MD; Ahmad Nassr, MD

08:30 - 08:34 **Paper #83: Factors Associated with Postoperative Kyphosis and Loss of Range of Motion After Cervical Disc Replacement**
Abel De Varona Cocero, BS; Stephane Owusu-Sarpong, MD; Fares Ani, MD; Camryn Myers, BA; Constance Maglaras, PhD; Themistocles S. Protopsaltis, MD

08:34 - 08:45 **Discussion**

08:45 - 09:00

Refreshment Break & Exhibit Viewing*

09:00 - 11:00

Session 6: Biomechanics & Complex Spine Abstracts and Keynote Speaker

Moderators: Kristen E. Jones, MD, FAANS & Meric Enercan, MD

09:00 - 09:04 **Paper #84: Spinal Surgery in Achondroplasia: Causes of Re-Operation and Reduction of Risks**
Arun R. Hariharan, MD, MS; Hans K. Nugraha, MD; Aaron J. Huser, DO; David S. Feldman, MD

09:04 - 09:08 **Paper #85: Can Non-Operative Treatment with Brace and Scoliosis Specific Exercises Be Effective for Severe Scoliotic Curves Exceeding 40° at Peak of Growth?**
Nikos Karavidas, PhysiOtherapist

09:08 - 09:12 **Paper #86: New Artificial Intelligence (AI) Driven Surface Topography Phone Application Help Screen Spinal Deformity Patients: Early Results from One Institution**
Marjolaine Roy-Beaudry, MSc; Marie Beausejour, PhD; Justin Dufresne; Rachelle Imbeault; Stefan Parent, MD, PhD

09:12 - 09:22 **Discussion**

09:22 - 09:26 **Paper #87: Comparison of Disc Height Restoration and Subsidence Rates Between Static versus Expandable Titanium Interbodies for Lateral Lumbar Interbody Fusion**
Kimberly Ashayeri, MD; Sean N. Neifert, BS; Darryl Lau, MD

**denotes Non-CME session/event*

Scientific Program

Friday, April, 12, 2024

09:26 - 09:30 **Paper #88: Biomechanics of Cage Subsidence**
Anna-Katharina Calek, MD; Frederic Cornaz, MD; Mauro Suter; Marie-Rosa Fasser, MSc; Mazda Farshad, MD, MPH; Jonas Widmer, MSc

09:30 - 09:34 **Paper #89: The in vivo Immune Response of Peek Spinal Interbody Device Materials with and Without Supplemental P-15 Peptides as a Osteobiologic Bone Graft Material**
Isaac Swink, MS; Patrick Schimoler, PhD; Daniel Altman, MD; Praveer Vyas, BS, MPH; Boyle Cheng, PhD

09:34 - 09:44 **Discussion**

09:44 - 09:48 **Paper #90: A Novel External Hinge Correction System for Vertebral Column Resection of Severe Angular Kyphosis**
Hong Zhang, MD; David Ross, MFA; Daniel J. Sucato, MD, MS

09:48 - 09:52 **Paper #91: Y Shaped Osteotomy in the Apical Vertebra for Treating Congenital Complex Rigid Scoliosis: At Least 2 Year Follow Up**
Xuhong Xue, MD, PhD; Sheng Zhao, MD

09:52 - 09:56 **Paper #92: Gradual Anterior Column Lengthening at the Level of PVCR Provides Both Regional and Global Ideal Sagittal Alignment and Prevents Iatrogenic Neurological Deficit**
Hamisi M. Mraja, MD; Baris Peker, MD; Halil Gok, MD; Cem Sever, MD; Tunay Sanli, MA; Selhan Karadereler, MD; Meric Enercan, MD; Azmi Hamzaoglu, MD

09:56 - 10:00 **Paper #93: The Dreaded False Negatives - When Intraoperative Neuromonitoring Fails to Detect Neural Deficits Associated with Complex Spinal Deformity Correction: A Prospective International Study from the AO Spine Knowledge Forum Deformity/Mep, Ssep, or Emg. How Reliable Are Intraoperative Neuromonitoring Alerts During Non-Cord Level Spinal Deformity Surgery? Results from The Spinal Deformity Intraoperative Monitoring (Sdim) Study/Recovery Patterns and De-Novo Neurological Deficits Associated with Intraoperative Neuromonitoring Alerts in Cord Level Spinal Deformity Surgeries - Results from an International Multicenter Prospective Spinal Deformity Intraoperative Monitoring (Sdim) Study./ What Events Are Associated with Intraoperative Neuromonitoring Alerts in Deformity Surgeries? Results from The Mulitcentre Prospective Spinal Deformity Intraoperative Monitoring (Sdim) Study.**
Alekos A. Theologis, MD; Justin S. Smith, MD, PhD; Ferran Pellisé, MD, PhD; Zeeshan M. Sardar, MD; So Kato, MD; Munish C. Gupta, MD; Kenny Y. Kwan, MD; Saumyajit Basu, MS(orth), DNB(orth), FRCSEd; Christopher P. Ames, MD; Kristen E. Jones, MD, FAANS; Anastasios Charalampidis, MD; Brett Rocos, FRCS; Lawrence G. Lenke, MD; Stephen J. Lewis, MD, FRCS(C); Andre Luis F Andujar, MD; Miranda L. Van Hooff, PhD
**Author list subject to adjustment during combination process*

10:00 - 10:10 **Discussion**

10:10 - 10:15 **Introduction of Keynote**
Marinus De Kleuver, MD, PhD

10:15 - 11:00 **Keynote Address: Senescense and Aging**
Assuntina G. Sacco, MD

11:00 - 11:30

Lunch Pick-Up & Exhibit Viewing*

11:30 - 12:30

Industry Workshops*

Each Hands-On Workshop will be programmed by a single-supporting company and will feature presentations on topics and technologies selected by the company. CME credits are not available for Hands-On Workshops.

12:30 - 12:45

Break & Exhibit Viewing*

**denotes Non-CME session/event*

Scientific Program

Friday, April, 12, 2024

12:45 - 14:15

Concurrent Sessions 7A & 7B

Session 7A: Anterior Surgery: The Current State of the Art

Moderators: Jwalant S. Mehta, MD, FRCS (Orth), MCh (Orth), MS (Orth), D Orth, & Per D. Trobisch, MD

12:45 - 12:47 **Introduction**
Jwalant S. Mehta, MD, FRCS (Orth), MCh (Orth), MS (Orth), D Orth

12:47 - 12:59 **The Open Thoracotomy: The Procedure and the Post-Operative Course**
Alexander Gibson, BSc, MBBS, FRCS

12:59 - 13:11 **The Thoracoscopic Procedure: Is It Really Better than Open**
Amer F. Samdani, MD

13:11 - 13:23 **Instrumentation of the Anterior Column: Procedure, Implants, Problems, Mitigation Strategies, and Level Selection**
Michael Ruf, MD

13:23 - 13:29 **Discussion**
Per D. Trobisch, MD

13:29 - 13:41 **Medium and Long-Term Effects of Anterior Surgery: Respiratory and Functional**
Peter O. Newton, MD

13:41 - 13:53 **A Review of Complications and the Learning Curve of the Anterior Approach**
Jason Bernard, MD, MBBS, FRCS (Orth)

13:53 - 14:05 **Revisional Anterior Surgery: Is It a Big Deal?**
Thomas Terramani, MD

14:05 - 14:15 **Discussion and Wrap-Up**
Jwalant S. Mehta, MD, FRCS (Orth), MCh (Orth), MS (Orth), D Orth

Session 7B: Surgical Treatment of Osteoporotic Vertebral Fracture-Induced Spinal Deformity

Moderators: Eric O. Klineberg, MD, & Kota Watanabe, MD, PhD

12:45 - 12:55 **Perioperative Pharmacological Treatment for Osteoporotic Spinal Deformity Including Japan**
Mitsuru Yagi, MD, PhD

12:55 - 13:05 **Surgical Options for Treatment for Osteoporotic Spinal Deformity Including the United States)**
Rajiv K. Sethi, MD

13:05 - 13:10 **Discussion**

13:10 - 13:15 **Situation of Treatment for Osteoporotic Spinal Deformity in South America**
Denis Sakai, MD

13:15 - 13:20 **Situation of Treatment for Osteoporotic Spinal Deformity in Europe**
Per D. Trobisch, MD

13:20 - 13:25 **Situation of Treatment for Osteoporotic Spinal Deformity in Asia (Especially in China)**
Qianyu Zhuang, MD

13:25 - 13:30 **Discussion**

13:30 - 14:15 **Case Discussion**
Denis Sakai, MD, Per D. Trobisch, MD, & Qianyu Zhuang, MD

14:15 - 14:30

Break & Exhibit Viewing*

**denotes Non-CME session/event*

Scientific Program

Friday, April, 12, 2024

14:30 - 15:30

Industry Workshops*

Each Hands-On Workshop will be programmed by a single-supporting company and will feature presentations on topics and technologies selected by the company. CME credits are not available for Hands-On Workshops.

15:30 - 15:55

Refreshment Break & Exhibit Viewing*

15:55 - 17:30

Session 8: Transition of Care for Patients with Spinal Deformities

Moderators: Stefan Parent, MD, PhD, & Lindsay M. Andras, MD

15:55 - 16:00 **Presentation of the Whitecloud Award Winning Paper**
Eric O. Klineberg, MD, & Per D. Trobisch, MD

16:00 - 16:05 **Introduction**
Stefan Parent, MD, PhD

16:05 - 16:12 **Transition of Care in EOS: When and How Should You Perform Final Surgery for Previously Treated EOS Patients**
Jwalant S. Mehta, MD, FRCS (Orth), MCh (Orth), MS (Orth), D Orth

16:12 - 16:17 **Discussion**

16:17 - 16:24 **The Mature AIS Patient with Moderate Scoliosis: Is There a Role for Scoliosis Specific Exercises?**
Kelly Grimes, DPT, GCS, OCS

16:24 - 16:29 **Discussion**

16:29 - 16:36 **Who Should Be Followed as a Young Adult? Are There Patients that Could Benefit from Long-Term Follow-Up During Adulthood?**
Jesse Shen, MD, PhD

16:36 - 16:41 **Discussion**

16:41 - 16:48 **Timing of Surgery for Moderate AIS: Should You Operate Early or Wait Later in Life?**
Baron S. Lonner, MD

16:48 - 16:53 **Discussion**

16:53 - 17:00 **The Buck Stops Here! The Difficult Decision Associated with Patients with Previous Spinal Deformity Surgery. Should Every Case Be Treated Surgically?**
Lawrence G. Lenke, MD

17:00 - 17:05 **Discussion**
Per D. Trobisch, MD

17:05 - 17:25 **Case Presentation**
Stefan Parent, MD, PhD, Lindsay M. Andras, MD, Kelly Grimes, DPT, GCS, OCS, Jesse Shen, MD, PhD, Baron S. Lonner, MD, Lawrence G. Lenke, MD, Per D. Trobisch, MD

17:25 - 17:30 **Conclusion**
Stefan Parent, MD, PhD

**denotes Non-CME session/event*

Scientific Program

Friday, April, 12, 2024

18:00 - 19:30

Innovation Celebration*

A reception offering food & beverages to celebrate the conclusion of sessions. Open to all registered delegates and guests of registered delegates. Tickets are $25 USD for registered delegates and $50 USD for guests of registered delegates and must be purchased in advance. If you have already registered and would like to add the Innovation Celebration and/or purchase gest tickets(s), you may do so here: IMAST24 Event Tickets

Saturday, April 13, 2024: INNOVATION DAY*

Innovation Day is an opportunity for SRS stakeholders to meet with their key opinion leaders and IMAST attendees. This day is to be used for study group meetings, industry educational events, industry education events, etc. More information can be found on the IMAST website.

*denotes Non-CME session/event

Upcoming 2024 SRS Regional Courses

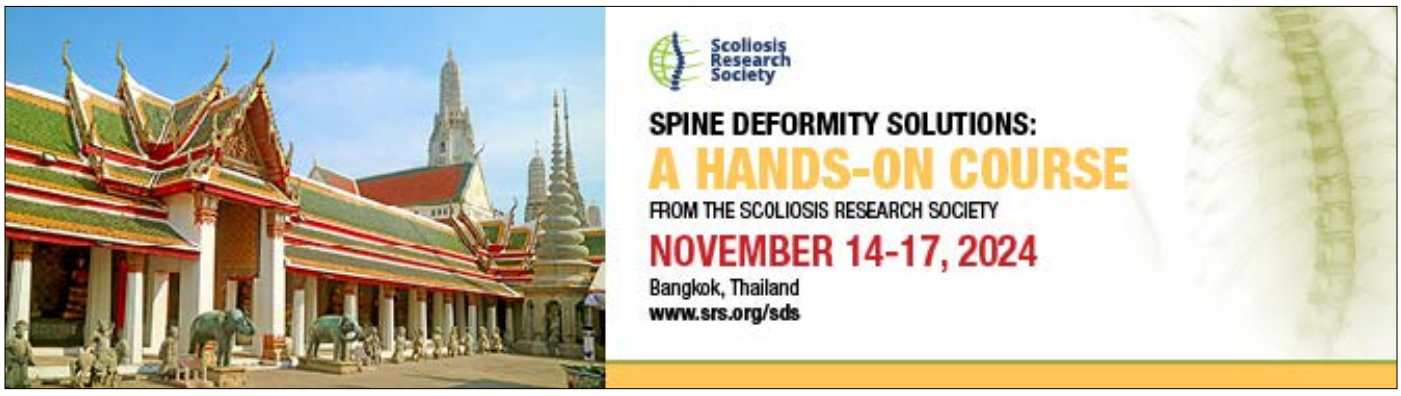
Current Concepts in Spine Deformity

This curriculum-based, interactive regional course is designed for 150-200 delegates by the Scoliosis Research Society and regionally representative SRS members. These courses combine lectures, case presentations, and panel discussions covering a broad range of spinal deformity issues. SRS Regional Courses also include Industry Workshops and an Exhibit Hall.

For orthopaedic and neurosurgeons who have completed specialty training, who practice spine surgery and have an interest in operative and non-operative treatment of patients with spinal deformity.

Spine Deformity Solutions: A Hands-On Course

The SRS hands-on courses provide an opportunity for participants to expand their knowledge and improve their skills through training and discussions with leading spinal deformity surgeons from throughout the world. Registration will be limited to ensure access to faculty, small-group interaction for better learning, and opportunities for hands-on work. A minimum of eight hours of the course will be devoted to lab work, with a strong faculty-to-learner ratio. Topics and lab sessions will cover all areas of the spine and a variety of conditions and techniques. The intimate learning theme will begin on night one with small group "Fireside Chats" with faculty and will proceed to presentations, video demonstrations and lab rotations on day 2 and 3.



Exhibitors

(as of November 2023)

SRS encourages IMAST delegates to visit the 2024 IMAST Exhibitors during exhibit viewing times and between sessions, the following companies will be represented.

Exhibitor Viewing Hours*

**Exhibiting hours and demonstrating companies are subject to change*

Wednesday, April 10	18:00 - 20:00
Thursday, April 11	09:00 - 17:30
Friday, April 12	08:30 - 16:00

Exhibitors as of November 30, 2023

ATEC Spine
1950 Camino Vida Roble
Carlsbad, CA 92008 USA
www.atecspine.com

Carlsmed
1800 Aston Ave.
Suite 100
Carlsbad, CA 92008 USA
www.carlsmed.com

DePuy Synthes
325 Paramount Drive
Raynham, MA 02767 USA
https://www.jnjmedtech.com/en-US/companies/depuy-synthes

Forethought Medical Technology Co. Ltd
19F, Building, ShanJin Financial Plaza, No. 1198, Yang-ShuPu Road, Yangpu District
Shanghai, China
www.forethoughtmed.com

Globus Medical, Inc.
2560 General Armistead
Audubon, PA 19403 USA
www.globusmedical.com

Medtronic
1800 Pyramid Place
Memphis, TN 38732 USA
www.medtronic.com

Momentum Health, Inc.
109-2727 Rue Saint-Patrick
Montreal, Quebec H3A 0K8 Canada
www.momentum.health.com

Ocutrx Technologies, Inc.
31642 Coast Highway, Ste 200
Laguna Beach, CA 92651
www.ocutrxtech.com

Pacira BioSciences, Inc.
5 Sylvan Way, Suite 300
Parsippany, NJ 07054 USA
www.pacira.com

SI-BONE
471 El Camino Road
Santa Clara, CA 95050
www.si-bone.com/providers

Spinal Elements
3115 S Melrose Dr STE 200
Carlsbad, CA 92010 USA
spinalelements.com

Stryker
600 Hope Parkway SE
Leesburg, VA 20175 USA
www.stryker.com

ZimVie
10225 Westmoor Drive
Westminster, CO 80021 USA
www.zimvie.com

Hands-On Workshops

(as of November 30, 2023)

IMAST delegates are encouraged to attend the Hands-On Workshops (HOW) on Thursday, April 11 and Friday, April 12. Morning, lunch, and afternoon sessions will be offered.

Each workshop is programmed by a single-supporting company and will feature presentations on topics and technologies selected by the company. Please note: CME credits are not available for Hands-On Workshops.

Thursday, April 11, 2024	Friday, April 12, 2024
08:00 - 09:00 *(includes breakfast)*	11:30 - 12:30 *(includes lunch)*
1. SI-BONE	1. ATEC Spine 2. DePuy Synthes 3. Pacira BioSciences, Inc.
12:00 - 13:00 *(includes lunch)*	14:30 - 15:30 *(includes coffee break)*
1. DePuy Synthes 2. Globus Medical 3. Medtronic 4. ZimVie	

Corporate Supporters

We are pleased to acknowledge and thank those companies that **provided financial support to SRS in 2023**. Support levels are based on total contributions throughout the year and include the Annual Meeting, IMAST, Global Outreach Scholarships, Edgar Dawson Memorial Scholarships, SRS Traveling Fellowships, and the Research Education (REO) Fund.

DOUBLE DIAMOND

DePuy Synthes
THE ORTHOPAEDICS COMPANY OF Johnson & Johnson

GLOBUS MEDICAL

Medtronic

NUVASIVE

ZimVie

DIAMOND

stryker

GOLD

B. Braun Medical
OrthoFix/SeaSpine
Pacira BioSciences, Inc.
SI-BONE

SILVER

ATEC Spine
OrthoPediatrics
SpineGuard SA

BRONZE

Angel Care Solutions
Arthrex, Inc.
Bio Imports
Cerapedics, Inc.
Cortex Medical
CURE International
Isto Biologics
Medacta
Shriners Children's

SRS
Scoliosis Research Society

59TH ANNUAL MEETING | September 10-14, 2024

BARCELONA *Spain*

Submit an Abstract

Abstract Submission Closes: February 1, 2024

www.srs.org/am24