SMISS Annual Forum ‘19
Program Agenda as of Sept. 9, 2019

Thursday, October 31, 2019
8:00am- Optional Cadaveric Lab
4:00pm - MISS Track & Endoscopic Track

4:00-
6:00 pm Registration

Friday, November 1, 2019
6:45am Registration

7:30 Non-CME Technology Workshops with Breakfast:
Globus Medical
Medtronic
SI-BONE

8:30 Welcome Program Chairs

Session 1 - Part 1: Degenerative Spine Surgery: Which Technique IS the Future? Mods: Dr. Ryu & Dr. Lieberman

8:35 TLIF is the Most Effective and Versatile MIS Technique K. Foley, MD
8:41 Today's ALIF is Less Morbid and the Most Effective Treatment M. Hisey, MD
8:47 Lateral is Proven to be the Optimal MIS Technique and Trans-psoas has the Data to Prove it R. Eastlack, MD
8:53 Anterolateral is the Holy Grail of MIS Techniques Balancing All Other Approaches R. Lehman, Jr., MD
8:59 Endoscopy is the True Future of MIS Spinal Surgery JS Kim, MD
9:05 Q&A
9:10 Case Discussion: Here’s Why You Don’t Want to use the Other Techniques Panel: Session Speakers & Dr. Soriano Sánchez

Experts in the Hot Seat


9:38 Expert #3: The Data Shows TLIF has a High Rate of Subsidence, Which Leads to Loss of Lordosis, Adjacent Level Disease, and Increases the Likelihood of Future Surgeries. How Can You Defend this Technique When There are Better Alternatives? Interviewer: I. Lieberman, MD Expert: JP Mobasser, MD
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<table>
<thead>
<tr>
<th>Session 1 - Part 2: Grade 1 Spondylolisthesis with Stenosis</th>
<th>Mods: Dr. Hofstetter &amp; Dr. Kotani</th>
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<tbody>
<tr>
<td>9:45 Spondylolisthesis: Is it a Single Diagnosis?</td>
<td>J. Lim, MD</td>
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<td>9:52 Indirect Decompression: Who is the Ideal Patient?</td>
<td>L. Pimenta, MD</td>
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<td>9:59 Decompression Only – MIS Technique is Least Destabilizing and Most Effective</td>
<td>R. Härtl, MD</td>
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<td>10:06 Q&amp;A</td>
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<tr>
<td>10:16 Spondylolisthesis: Is There Data to Support Arthrodesis?</td>
<td>A. Kanter, MD</td>
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<td>10:23 Pump It Up - Static vs. Expandable Interbody Cages</td>
<td>K. Singh, MD</td>
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<td>10:30 In a 1-2 Level Lumbar Spondylolisthesis, What’s the Relationship Between Spinopelvic Parameters and Function?</td>
<td>S. Qureshi, MD</td>
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<td>10:37 Q&amp;A</td>
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<td>10:45 Refreshment Break &amp; Exhibit Viewing</td>
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**Concurrent Session 2A: Emerging & Navigation Free Papers**

**Mods: Dr. Eastlack & Dr. Huntsman**

<table>
<thead>
<tr>
<th>Paper #1</th>
<th>Preliminary Safety and Outcomes of Paraspinous Tension Band for Degenerative Spondylolisthesis in 100 Subjects with 6 Months Follow-up</th>
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<tr>
<td>11:20</td>
<td>Hyun Bae; Ivan Cheng, MD; Rick Sasso, MD; Alan Villavicencio; William F. Lavelle, MD; Timothy Yoon, MD; Ravi Bains, MD; Kuo Calvin, MD; Kim Kee, MD; Harvinder Sandhu, MD; Michael Stauff, MD; Khalid Sethi, MD; Jeff Fischgrund, MD; William Welch, MD; Reginald Davis, MD; Elizabeth Yu, MD; Harel Deutsch, MD; Sigurd Berven, MD; Matthew Mermer, MD; Umesh Metkar, MD; Ammar Hawasli, MD; Dennis Crandall, MD; Todd Alamin, MD; Richard Tallarico, MD; and Rick Guyer, MD</td>
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| 11:24 | **Paper #2:** Preliminary Safety and Outcomes of Paraspinous Tension Band FDA Trial for Degenerative Spondylolisthesis  
Louis Fielding, MS |
| 11:28 | **Paper #3:** Improved Bone-removal using a New Device in Open and Minimal Invasive Approaches: A 2-center Experience with 143 Patients  
John Peloza, MD; Larry Khoo, MD; Michael Millgram, MD; Scott Kutz, MD; Richard Guyer, MD; and Ely Ashkenazi, MD |
| 11:32 | **Paper #4:** Outcomes and Predictors of Failure to Improve Following Unilateral Laminotomy with Bilateral Decompression  
Michael Schallmo, BS; Ziyad Knio, BS; Wesley Hsu, MD; Benjamin Corona, PhD; Justin Lackey, BS; Alejandro Marquez-Lara, MD; T. David Luo, MD; Suman Medda, MD; Bradley Wham, MD; Tadhg O’Gara, MD |
| 11:36 | Discussion |
| 11:44 | **Paper #5:** Minimally Invasive TLIF with Expandable Articulating Interbody Spacers Significantly Improves Radiographic Outcomes Compared to Static Interbody Spacers  
Anthony Russo, MD; Steven Schopler, MD; Katelyn Stetzner, FNP-C; Samantha Greeley, BS; Torrey Shirk, BA; and Charles Ledonio, MD, CCRP |
| 11:48 | **Paper #6:** Comparative Effectiveness of Minimally Invasive Bilateral Transforaminal Lumbar Interbody Fusions using Two Intervertebral Titanium Expandable versus Peek Static Interbody Spacers: One-year Radiographic Outcomes  
Steven Schopler, MD; Nickul Jain, MD; Emily Fish, PA-C; Jessica Riggleman, BS; Samantha Greeley, BS; and Charles Ledonio, MD, CCRP |
| 11:52 | **Paper #7:** Implementation of an Enhanced Recovery After Surgery (ERAS) Program for Patients Undergoing Same Day Outpatient Elective Minimally Invasive Transforaminal Lumbar Interbody Fusion (MIS TLIF).  
Samuel Joseph, MD; Uhuru Smith, MD; and Ashley Urso, BS |
11:56 Paper #8: Virtual/Mixed Reality Technologies for Minimally Invasive and Complicated Spinal Surgery
Norihiro Isogai; Haruki Funao; Maki Sugimoto; Wataru Narita; Aeru Hayashi; Yutaka Sasao; Makoto Nishiyama; Keijyu Aokage; Masahiro Tsuboi; and Ken Ishii

12:00 Discussion

David Wallace, MD; Arnold Vardiman, MD; Grant Boother, MD; Neil Crawford, PhD; Jessica Riggleman, BS; Samantha Greeley, BS; and Charles Ledonia, MD, CCRP

12:12 Paper #10: Combining Technologies - Robotic-assisted Endoscopic Transforaminal Lumbar Interbody Fusion
Jason Liounakos, MD and Michael Wang, MD

Themistocles Protopsaltis, MD; Jeffery Larson, MD; Richard Frisch, MD; Kade Huntsman, MD; Todd Lansford, MD; Robert Brady, MD; Chris Maulucci, MD; Gerald Hayward II, BS; Jonathan Harris, MS; Jorge Gonzalez, BS; and Brandon Bucklen, PhD

Keiji Wada; Ryo Tamaki; Tomohisa Inoue; and Ken Okazaki

12:24 Discussion

Brett Braly, MD and Sam Hasan, RT

Haruki Funao; Norihiro Isogai; Kodai Yoshida; Yutaka Sasao; Makoto Nishiyama; and Ken Ishii

Avani Vaishnav, MBBS; Harvinder Sandhu, MD, MBA; Catherine Himo Gang, MPH; Steven McAnany, MD; Srvaisht Iyer, MD; Todd Albert, MD; and Sheeraz Qureshi, MD, MBA

12:44 Discussion

12:50 Lunch

Concurrent Session 2B: Degenerative & Posterior Free Papers

Sertac Kirnaz, MD; Robert Nick Hernandez, MD; Sara Lener, MD; Christoph Wipplinger, MD; Franziska Schmidt, MD; and Roger Härtl, MD

11:24 Paper #17: A Comparison of Minimally Invasive and Open Transforaminal Lumbar Interbody Fusion for Grade 1 Degenerative Lumbar Spondylolisthesis: An Analysis of the Prospective, Quality Outcomes Database
Andrew Chan, MD; Erica Bisson, MD, MPH; Mohamad Bydon, MD; Steven Glassman, MD; Kevin Foley, MD; Christopher Shaffrey, MD; Eric Potts, MD; Mark Shaffrey, MD; Domagoj Coric, MD; John Knightly, MD; Paul Park, MD; Michael Wang, MD; Kai-Ming Fu, MD, PhD; Jonathan Slotkin, MD; Anthony Asher, MD; Michael Virk, MD, PhD; Panagiotis Kerezoudis, MD, MS; Mohammed Alvi, MBBS; Jian Guan, MD; Brenton Penicooke, MD; Regis Haid, MD; and Praveen Mummaneni, MD

 Mods: L. Khoo & R. Härtl
Joon Yoo, BA; Nathaniel Jenkins, MS; James Parrish, MPH; Nadia Hryniewycz, BS; Thomas Brundage, BS; and Kern Singh, MD

Yoshihisa Kotani, MD, PhD; Tachi Hiroyuki, MD; Yumejiro Nakamura, MD; and Takanori Saito, MD

11:36 Discussion

Aaron Buckland, MD, FRACS; Jordan Manning, BA; Carlos Leon, BE; Dennis Vasquez-Montes, MS; Leon Eisen, MD; Mark Medley, MD; Kimberly Ashayeri, MD; Nicholas O'Malley, BS; Themistocles Protopsaltis, MD; and J. Alex Thomas, MD

11:48 Paper #21: Clinical Results of Percutaneous Endoscopic Transforaminal Lumbar Interbody Fusion: A New Modified Technique for Treating Degenerative Lumbar Spondylolisthesis
Ken Nagahama; Eihiro Murota; and Katsuhisa Yamada

11:52 Paper #22: A New Groove-entry Technique for Inserting Thoracic Percutaneous Pedicle Screws
Ken Ishij, MD; Norihiro Isogai, MD; Yoshiyuki Takahashi, MD; Kodai Yoshida, MD; Yutaka Sasao, MD; Makoto Nishiyama, MD; and Haruki Funao, MD

11:56 Paper #23: The Use of Bone Morphogenetic Protein in the Intervertebral Disc Space in Minimally Invasive Transforaminal Lumbar Interbody Fusion: 10-year Experience in 688 Patients
Jacob Archer, MD and Jean-Pierre Mobasser, MD

12:00 Discussion

12:08 Paper #24: Multilevel Stenosis and Deformity of Spine - When is Only a Microsurgical Approach Indicated?
Dmitry Dzukaev; Anton Borzenkov; Vladimir Guly; and Mikhail Safronov

John Chi, MD, MPH; Yi Lu, MD, PhD; Kevin Huang, MD; Stephane Lavoie, MD; Martin Krag, MD; Pierce Nunley, MD; and Mohamad Bydon, MD

12:16 Paper #26: Single-level Controlled Comparison of OLIF51 And PPS in Lateral Position versus MIS TLIF for Lumbosacral Degenerative Disorders: Clinical and Radiologic Study
Yoshihisa Kotani, MD, PhD; Hiroyuki Tachi, MD; Yumejiro Nakamura, MD; and Takanori Saito, MD

Timothy Westbrooks, BS; Weston Bell, BS; Richard Smith, PhD; and Raymond Gardocki, MD

12:24 Discussion

Dong Geun Lee, MD

12:36 Paper #29: Does Degenerative Spondylolisthesis Require Instrumented Fusion? Unilateral Laminotomy for Bilateral Decompression versus Posterior Decompression with Fusion at 5-year Follow-up
Calvin Kuo, MD; Maqdooda Merchant, MA, MSc; Mayur Kardile, MD; Alem Yacob, MD, MSc; Kamran Majid, MD, MBA; and Ravi Bains, MD

12:40 Paper #30: Clinical Efficacy and Safety of Trans-sacral Epiduroscopic Laser Decompression Compared to Percutaneous Epidural Neuroplasty
Bong Ju Moon, Dr; Hyuk Hur, Dr; Gwang Jun Lee, Dr; Seul Gi Lee, Dr; and Jung-Kil Lee, Dr
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12:44 Discussion

12:50 Lunch

Concurrent Session 2C: Young Surgeons’ Free Papers & Panel
Mods: I. Moss & E. Yu

Min-Gi Lee; Guang-Xun Lin; Sagar Sharma; Akaworn Mahatthanatrakul; and Jin-Sung Kim

11:23 Paper #32: Early Radiological & Clinical Outcomes of Minimally Invasive Oblique Lumbar Interbody Fusion in Degenerative Lumbar Spine Disorders in Indian Population
Sharvil Gajjar, MS and Amit Jhala, MD

11:26 Paper #33: Delayed Neurologic Deficit in Post OLIF Surgery Patient: Easy to Miss Findings on Images
Seon Ho Park, MD and Bong Ju Moon, MD

11:29 Paper #34: Utility of Intraoperative Motor-evoked Potential During L4-5 Direct Transpsoas Lateral Interbody Fusion to Avoid Nerve Injury
Nima Alan; Gregory Adams, BS; Nitin Agarwal, MD; Alp Ozpinar, MD; Jeffery Balzer, PhD; Vincent Miele, MD; and Adam S. Kanter, MD

11:32 Discussion

11:38 Paper #35: Percutaneous Transforaminal Lumbar Interbody Fusion with an Expandable Cage Through Kambin’s Triangle: Initial Results and Feasibility
Timothy Wang, MD; Vikram Mehta, MD, MPH; Eric Sankey, MD; Alexia Bwensa; Mostafa Fabr, MD; C. Rory Goodwin, MD, PhD; Isaac Karikari, MD; and Muhammad Abd-El-Barr, MD, PhD

11:41 Paper #36: A Radiographic Analysis of Segmental Sagittal Correction Following Interbody Fusion Through an Antepsoas Approach
Joseph Lombardi, MD; Nathan Lee, MD; Jun Kim, MD; and Ronald Lehman, Jr., MD

Ahmed Jorge, PhD, Nitin Agarwal, MD; Edward Andrews, MD; Alp Ozpinar, MD; Nima Alan, MD; David Hamilton, MD; David Okonkwo, MD, PhD; and Adam Kanter, MD

Clinton Morgan, MD; Jacob Godzik, MD; Corey Walker, MD; Harrison Farber, MD; Courtney Hemphill, BA; and Juan Uribe, MD

11:50 Discussion

Franziska Schmidt, MD; Hervé Lekuya; Sertac Kirnaz; Nick Hernandez; Ibrahim Hussain; Louis Chang; Christoph Wipplinger; Cameron Rawanduz; and Roger Härtil

Guang-tong Cong, MD; Avani Vaishnav, MBBS; Joseph Barbera, MD; Hiroshi Kumagai, MD; James Dowdell, MD; Catherine Himo Gang; Sravisht Iyer, MD; Steven McAnany, MD; Todd Albert, MD; and Sheeraz Qureshi

Fraser Henderson Jr., MD; Zachary Hubbard, MD, MPH; Samuel Jones, BS; Jessica Barley, PhD; and Bruce Frankel, MD
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| 12:05 | **Paper #42:** Percutaneous Endoscopic Transforaminal Interbody Fusion Through Bi-portal Technique  
*Javier Quillo-Olvera, MD; Javier Quillo-Reséndiz, MD; Diego Quillo-Olvera, MD; and Jin-Sung Kim, MD, PhD* |
| 12:08 | Discussion |
| 12:14 | **Paper #43:** Defining the MIS-TLIF: A Systematic Review of Techniques and Technologies used by Surgeons Worldwide  
*Sertac Kirnaz, MD; Robert Nick Hernandez, MD; Sara Lener, MD; Christoph Wipplinger, MD; Franziska Schmidt, MD; and Roger Härtl, MD* |
| 12:17 | **Paper #44:** Transfacet Minimally Invasive TLIF with Expandable Interbody Device: Technical Report and Case Series  
*Christopher Dibble, MD, PhD; Jawad Khalifeh, BS; and Wilson Ray, MD* |
| 12:20 | **Paper #45:** The Impact of NSAID use After Lumbar Fusion Surgery on Fusion Rate and Complications: A Meta-Analysis  
*Yahya Othman; Abduljabbar Alhammoud, MD; Avani Vaishnav, MBBS; Catherine Himo Gang, MPH; Steven McAnany, MD; Sratsisht Iyer, MD; Todd Albert, MD; and Sheeraz Qureshi, MD, MBA* |
| 12:23 | **Discussion** |
| 12:32 pm | **Young Surgeon Career Q & A Panel:** J. Golan, J. Heller, J. Turner, and E. Yu |
| 12:50 | **Young Surgeon New Technology Lunch** |

**Concurrent Session 3A: Endoscopy – Lessons to Learn from Cardio Thoracic Surgeons**  
*Mods: Dr. Hofstetter & Dr. S. Yi*

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<tr>
<td>1:45</td>
<td>Introduction</td>
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*K. Madhavan, MD* |
| 1:56  | Uniform Nomenclature  
*JS Kim, MD* |
| 2:04  | The Benefit Zone  
*S. Hasan, MD* |
| 2:12  | Q&A |
| 2:22  | Endo Options for Cervical Pathology  
*J. Shen, MD* |
| 2:30  | Advanced Biportal Endoscopic Approach for Lumbar Spine Pathology  
*S. Yi, MD* |
| 2:38  | Transforaminal Endoscopic Lumbar Interbody Fusion (TELIF)  
*M. Wang, MD* |
| 2:46  | Q&A |
| 2:54  | Advanced Transforaminal Approaches for Lumbar Spine Pathology  
*J. Bae, MD* |
| 3:02  | Complications and Management of Full Endoscopic Spine Surgery  
*C. Hofstetter, MD* |
| 3:10  | Endo: New Horizons and Challenges  
*A. Telfeian, MD* |
| 3:18  | Q&A |
| 3:25  | Refreshment Break & Exhibit Viewing |

**Concurrent Session 3B: Fusion Augmentation – MythBusters**  
*Mods: Dr. K. Foley & Dr. Wen Cheng Lo*

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| 1:45  | Biology of Arthrodesis  
*K. Than, MD* |
| 1:52  | PEEK and Porous PEEK – Science and Clinical Results  
*F. Phillips, MD* |

**Science and Clinical Results**
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1:59 Porous Titanium
2:06 Titanium Coated and Onlay Cages
2:13 Q&A

2:23 Innovation in Osteoinductive Implant Surface Biotechnology
2:30 3D Printed Surface Technology—Is There Something to It?
2:37 Cellular Allograft - Science or Speculation?
2:44 Navigating Fusion Augmentation in Clinical, Economic, Administrative, and Medicolegal Reality
2:51 Q&A

Experts in the Hot Seat
The Vast Majority of Surgeries That We Do are One- and Two-level Fusions for Degenerative Disease in the Lumbar and Cervical Spine. Iliac Crest and Local Bone Autograft Show Excellent Fusion Results. Therefore, How Can You Defend:

3:05 Expert #1: The Use of Cell-based Allograft
Interviewer: S. Berven, MD; Expert: S. Ryu, MD
3:10 Expert #2: The Use of 3D-printed Metal Cages
Interviewer: S. Ryu, MD; Expert: S. Berven, MD
3:15 Q&A
3:25 Refreshment Break & Exhibit Viewing

Session 4: Robotics – Fact, Fiction, Future
Mods: Dr. S. Ryu & Dr. G. Anderson

3:50 "I Don’t Use a Robot. Remind Me Again - Why Should I?"
3:57 "I Want to Use a Robot. How Can I Avoid a Learning Curve that Makes My First Cases Take Twice as Long as Usual?"
4:04 "I Use a Robot. What’s Been Good; What’s Been Challenging"
4:11 What’s the Future?
4:18 Radiation Safety with Robotics and Navigation
4:25 Q&A

Technology Updates (Non-CME)
4:47 Tech Update: DePuy Synthes
How Viper Prime Changed My Practice – M. Wang, MD
4:53 Tech Update: Cerapedics
4:59 Tech Update: SpineCraft
5:05 Tech Update: Prosidyman
5:11 Tech Update: Spinal Simplicity
5:17 Q&A
5:30 Adjourn

5:30-6:30 Welcome Reception in Exhibit Hall
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Saturday, November 2, 2019
7:00 am Registration
7:30 Breakfast

Session 5: Technology Updates (Non-CME)
8:00 am Company 5
8:06 Company 6
8:12 Company 7
8:18 Q&A
8:24 Company 8
8:30 Company 9
8:36 Company 10
8:42 Q&A
8:55 Welcome

Session 6 - Part 1: Global Alignment and MIS
Mods: Dr. K. Singh & Dr. P. Park
9:00 Sagittal Parameters: Where We Started and Where We are Now P. Derman, MD
9:07 Under Correction in Some Patients is the Right Thing to Do P. Park, MD
9:14 The Impact of Patient Co-Morbidities, the Fragility Index, and Osteoporosis on Decision-making for Surgical Deformity Correction S. Iyer, MD
9:21 Q&A

Point/Counterpoint
9:27 Open Correction for Adult Deformity Remains the Gold Standard S. Berven, MD
9:32 MIS Correction for Adult Deformity is the New Gold Standard G. Mundis, MD
9:37 Q&A

Expert in the Hotseat
Case Presentation Pre-op Interviewer: K. Singh, MD
Case Outcome

Session 6 - Part 2: Complications
Mods: Dr. K. Singh & Dr. S. Iyer
9:54 Are We as Surgeons to Blame for Part of the Opioid Crisis? G. Lopez, MD
10:01 Marketing Forces and Financial Reimbursement are Driving MIS Decision Making P. Derman, MD

Case Complications
10:15 Case Example: MIS Complication and What I Learned L. Khoo, MD
10:20 Case Example: MIS Complication and What I Learned N. Anand, MD
10:25 Q&A
10:30 SMISS Presentations
### Technology Updates (Non-CME)

- **10:37**  
  Tech Update: Innovasis

- **10:43**  
  Tech Update 1: Orthofix

- **10:49**  
  Tech Update 2: Orthofix

- **10:55**  
  Q&A

- **11:00**  
  Refreshment Break & Exhibit Viewing

### Concurrent Session 7A: Deformity & Cervical Free Papers

**Mods:** Dr. Y. Kotani & Dr. J. Turner

**11:30**  
**Paper #47:** Reoperation and Complication Rates After Strategic Circumferential Minimally Invasive Surgical (CMIS) Correction of Adult Spinal Deformities (ASD) - A 7-year Study  
*Neel Anand, MD; Babak Khandehroo, MD; Sheila Kahwaty, PA-C; and Edward Nomoto, MD*

**11:34**  
**Paper #48:** Revision Surgery Rates in Patients Undergoing Minimally Invasive Adult Spinal Deformity Surgery: Is There a Correlation with Roussouly Spine Type?  
*Dean Chou; Pierce Nunley; Robert Eastlack; Juan Uribe; Richard Fessler; Khoi Than; Paul Park; Kai-Ming Fu; Michael Wang; Adam Kanter; David Okonkwo; Neel Anand; Gregory Mundis; and Praveen Mummaneni*

**11:38**  
**Paper #49:** Are the New Strategic Circumferential Minimally Invasive Surgical (CMIS) Techniques a Safe and Effective Approach for Correction of Adults Spinal Deformity (ASD) in Elderly Patients?  
*Neel Anand, MD; Edward Nomoto, MD; Babak Khandehroo, MD; and Sheila Kahwaty, PA-C*

**11:42**  
**Paper #50:** The Minimally Invasive Interbody Selection Algorithm for Spinal Deformity  
*Praveen Mummaneni, MD; Christopher Shaffrey, MD; Robert Eastlack, MD; Juan Uribe, MD; Richard Fessler, MD; Leslie Robinson, MD; Joshua Rivera; Dean Chou, MD; Kai-Ming Fu, MD; Adam Kanter, MD; David Okonkwo, MD; Pierce Nunley, MD; and Khoi Than, MD*

**11:46**  
Discussion

**11:54**  
**Paper #51:** A Prospective Analysis of Minimally Invasive Surgery for Adult Spinal Deformity: A Multicenter Study  
*Gregory Mundis Jr., MD; Paul Park, MD; Robert Eastlack, MD; Juan Uribe, MD; Stacie Tran; Kenyu Ito, MD; Pierce Nunley, MD; Michael Wang, MD; Richard Fessler, MD, PhD; Neel Anand, MD; Adam Kanter, MD; David Okonkwo, MD; and Christopher Shaffrey, MD*

**11:58**  
**Paper #52:** Treatment of Adult Scoliosis Fractional Curve with Minimally Invasive Surgery: Anterior versus Posterior Approach?  
*Robert Eastlack, MD; Dean Chou, MD; Juan Uribe, MD; Richard Fessler, MD; Khoi Than, MD; Stacie Tran; Paul Park, MD; Kai-Ming Fu, MD; Michael Wang, MD; Adam Kanter, MD; David Okonkwo, MD; Pierce Nunley, MD; Neel Anand, MD; Gregory Mundis, MD; Praveen Mummaneni, MD; and International Spine Study Group*

**12:02**  
**Paper #53:** Does ACR Result in Greater Morbidity than LLIF Alone When Treating Adult Spinal Deformity?  
*Robert Eastlack, MD; Juan Uribe, MD; Richard Fessler, MD, PhD; Khoi Than, MD; Stacie Tran; Dean Chou, MD; Paul Park, MD; Kai-Ming Fu, MD; Michael Wang, MD; Adam Kanter, MD; David Okonkwo, MD; Pierce Nunley, MD; Neel Anand, MD; Praveen Mummaneni, MD; Gregory Mundis Jr., MD; and International Spine Study Group*

**12:06**  
**Paper #54:** Endoscopic Surgical Resection of the Retropulsed S1 Vertebral Endplate In L5-S1 Spondylolisthesis: Case Series  
*Albert Telfeian, MD, PhD*

**12:10**  
Discussion
12:18  **Paper #55**: Radiographic and Surgical Outcome Analysis of Lenke 1A Adolescent Idiopathic Scoliosis (AIS) Correction: Open vs. Minimally Invasive  
Matthew Geck, MD; Devender Singh, PhD; Eeric Truumees, MD; and John Stokes, MD
12:22  **Paper #56**: Minimally Invasive Surgical Technique (MIST) for Treatment of Cervical Spondylolytic Myelopathy and Radiculopathy  
Reginald Knight, MD; Frank Barber, PA-C; Scott Grainger, BSRN; Melissa Scribani, PhD; and Nicole Krupa, MS
12:26  **Paper #57**: Therapeutic Comparison of Endoscopic Spine Surgery versus Anterior Cervical Decompression and Fusion for Cervical Spondylotic Myelopathy  
Xifeng Zhang, Dr
12:30  **Paper #58**: Can Multilevel Standalone Cervical Fusion Replace Multilevel Plating in Outpatient Setting  
Fabio Pencle and Kingsley Chin, MD
12:34  Discussion
12:42  **Paper #59**: Two-year Retrospective Bayesian Assessment of Cervical Artificial Disc Replacement Failure Factors  
Amir Vokshoor, MD; Vance Matthews, BA; Sophia Mostowy, BA; and Johny Tran, BA
12:46  **Paper #60**: The Effect of Duration of Symptoms on Clinical Outcomes Following Anterior Cervical Discectomy and Fusion  
Joon Yoo, BA; Nathaniel Jenkins, MS; James Parrish, MPH; Thomas Brundage, BS; Nadia Hrynewycz, BS; and Kern Singh, MD
12:52  **Paper #61**: Clinical Adjacent-segment Pathology After Anterior Cervical Discectomy and Fusion: Results After a Minimum of 10-year Follow-up  
Sung-Kyu Kim and So Hyun Moon

1:00  Lunch & Last Chance for Exhibit Viewing

**Concurrent Session 7B: Lateral, Biologics & Healthcare Economics Free Papers**
**Mods: Dr. J. Roh & Dr. A. Kanter**
11:30  **Paper #62**: Lateral Access Window for ALIF at L5-S1: Anatomical Measurements to Aid Safety and Feasibility  
Brian Kwon, MD
11:34  **Paper #63**: Comparative Effectiveness of Adjustable Lordotic Expandable versus Static Lateral Lumbar Interbody Fusion Devices: Two Year Clinical and Radiographic Outcomes  
Yan Michael Li, MD; Zheng Huang, MD, PhD; James Towner, MD; Yan Icy Li, PhD; Jessica Riggleman, BS; and Charles Ledonio
11:38  **Paper #64**: Laterally Placed Expandable Interbody Spacers Improve Radiographic and Clinical Outcomes: A Two-year Follow-up Study  
Yan Michael, MD, PhD; Zheng Huang, MD, PhD; James Towner, MD; Yan Icy Li, PhD; Samantha Greeley, BS; and Charles Ledonio, MD, CCRP
11:42  **Paper #65**: Determinants of Indirect Decompression in Lateral Lumbar Interbody Fusion  
David Xu, MD; Jakob Godzik, MD; Corey Walker, MD; Joshua Wewel, MD; Nikolay Martirosyan, MD; James Zhou, MD; Jay Turner, MD, PhD; and Juan Uribe, MD
11:46  Discussion
11:54  **Paper #66**: The Role of Osteobiologics in Posterior Spinal Fusion Surgery: Does a Cellular Based Allograft Perform as Well as Autograft  
Donald Kucharzyk, DO and Dushan Budimir, BS
**SMISS Annual Forum ‘19**

*Program Agenda as of Sept. 9, 2019*

11:58  **Paper #67**: Titanium Implants Manufactured with Proprietary 3D-printing Build Themes Contain Surface Features that Increase Biologic Activity  
*Xiaoxan Xin; Kris Radcliff, MD; and David Rowe, MD*

12:02  **Paper #68**: Cost-effectiveness of Microdiscectomy versus Endoscopic Discectomy for Lumbar Disc Herniation  
*Jin-Sung Kim, MD, PhD; Kyung Chul Choi, MD, PhD; and Choon Keun Park, MD, PhD*

11:56  **Paper #69**: Combined Nucleus Pulposus Augmentation and Annulus Fibrosus Repair Prevents Intervertebral Disc Degeneration After Experimental Discectomy  
*Sertac Kirnaz, MD; Christoph Wipplinger, MD; Stephen Sloan; Franziska Schmidt, MD; Antonella Schiavinato; Lawrence Bonassar, PhD; and Roger Härtl, MD*

12:10  Discussion

12:18  **Paper #70**: Lost to Follow-up in Minimally Invasive Lumbar Spine Surgery  
*Darren Chen, BA; Avani Vaishnav, MBBS; Catherine Himo Gang; Steven McAnany, MD; Sravisht Iyer, MD; Todd Albert, MD; and Sheeraz Qureshi, MD, MBA*

12:22  **Best Paper Award Finalist**  
**Paper #71**: The Economic Impact of Non-reimbursable Events in Open, Minimally Invasive, and Robot Assisted Lumbar Fusion Surgery  
*Avery Brown, MS; Katherine Pierce, BS; Cole Bortz, BS; Haddy Alas, BS; Hamid Hassanzadeh, MD; Lawal Labaran; Dennis Vasquez-Montes, BS; Waleed Ahmad, MS; Sara Naessig, BS; Shaleen Vira, MD; Bassel Diebo, MD; Daniel Sciubba; Pierce Nunley; Shaleen Vira; Paul Park; Michael Gerling, MD; Aaron Buckland, MD; and Peter Passias, MD*

12:26  **Paper #72**: Return to Activities and Discontinuation of Narcotics After Minimally Invasive Lumbar Spine Surgery  
*Jung Kee Mok, BS; Avani Vaishnav, MBBS; Catherine Himo Gang, MPH; Steven McAnany, MD; Sravisht Iyer, MD; Todd Albert, MD; and Sheeraz Qureshi, MD, MBA*

12:30  **Paper #73**: MIS in Developing World: An Indigenous Approach to Avoid Economic Burden  
*Viswanadha Arun-Kumar; Viswanadha Bhavya, MS, IDCCM; and J. Naresh Babu, MS, FNB*

12:34  Discussion

12:42  **Best Paper Award Finalist**  
**Paper #74**: A Prospective, In-depth Analysis of Perioperative Anterior Thigh Symptoms Associated With a Direct Lateral Access Approach for Lumbar Interbody Fusion  
*Pierce Nunley, MD; Clint Hill, MD; John Malloy, DO; K. Brandon Strenge, MD; and Marcus Stone, PhD*

12:46  **Paper #75**: Comparative Analysis of Vascular Anatomy in OLIF51 Surgery by using MRI and Intraoperative Enhanced CT  
*Hiroyuki Tachi, MD; Yoshihisa Kotani, MD, PhD; Yumejiro Nakamura, MD; and Norimasa Iwasaki, MD, PhD*

12:52  **Paper #76**: Psoas Muscle Mass are Maintained and no Progress of Fatty Degeneration After LLIF  
*Tetsuro Hida, MD; Gregory Mundis Jr., MD; and Robert Eastlack, MD*

1:00  Lunch & Last Chance for Exhibit Viewing

**Concurrent Session 7C: Young Surgeon Free Papers**  
**Mods**: Dr. J. Uribe & Dr. L. Pimenta

11:30  **Paper #77**: The Effect of Surgical Decompression and Fusion on Balance in Patients with Degenerative Lumbar Spondylolisthesis  
*Ram Haddas, PhD; Peter Derman, MD; John Burleson, MD; Andrew Block, PhD; and Isador Lieberman, MD*
11:33  **Paper #78**: Rate of Fusion in Minimally Invasive Transforaminal Lumbar Interbody Fusion
*Chad Campion, MD; Catherine Olinger, MD; Kirk Thompson, MD; and Raymond Gardocki, MD*

11:36  **Paper #79**: Early Failures after Lumbar Discectomy Surgery: An Analysis of Readmissions and Reoperations in 62,690 patients
*Andre Samuel, MD; Noor Maza, BS; Avani Vaishnav, MBBS; Francis Lovecchio, MD; Catherine Himo Gang, MPH; Srvatisht Iyer, MD; Steven McAnany, MD; Todd Albert, MD; and Sheeraz Qureshi, MD, MBA*

11:39  **Paper #80**: Minimally Invasive Decompression without Instrumentation for Lumbar Spondylolisthesis
*Tanmoy Maiti*

11:42  Discussion

11:48  **Paper #81**: Lumbar Microdecompression in Elderly versus General Adult Patients: Comparable Outcomes Despite Group Differences
*Ziyad Knio, BS; Samuel Rosas, MD; Michael Schallmo, BS; and Tadhg O’Gara, MD*

11:51  **Paper #82**: What is the Learning Curve for Endoscopic Microdiscectomy?
*Kirk Thompson, MD; Catherine Olinger, MD; Chad Campion, MD; and Raymond Gardocki, MD*

11:54  **Paper #83**: Extreme Lateral Lumbar Interbody Fusion in the Management of Adult Degenerative Scoliosis: A Retrospective Study
*Caterina Fumo; Luca Proietti; Marco Renzi; Andrea Perna; and Francesco Ciro Tamburrelli*

11:57  **Paper #84**: Indirect Decompression for the Treatment of Degenerative Lumbar Stenosis
*Peter Derman, MD, MBA; Abbey Lauderback; Eamon Kalafchi, BS; and Donna Ohnmeiss, PhD*

12:00  Discussion

12:06  **Paper #85**: Minimal Clinically Important Difference and Substantial Clinical Benefit using PROMIS CAT in Cervical Spine Surgery
*Iyer Srvatisht, MD; Benjamin Kechen, BS; Daniel Stein, BS; Michael Steinhaus, MD; Karim Shafi, MD; Thomas Ross, RN; Jingyan Yang, PhD; Kern Singh, MD; Todd Albert, MD; Darren Lebl, MD; Russel Huang, MD; Harvinder Sandhu, MD; Bernard Rawlins, MD; Frank Schwab, MD; Virginie Lafage, PhD; and Han Jo Kim, MD*

12:09  **Paper #86**: Does Positioning of Cervical Disc Arthroplasty Implant Affect Postoperative Outcome
*Yahya Othman; Russel Huang, MD; Philip York, MD; Avani Vaishnav, MBBS; Steven McAnany, MD; Srvatisht Iyer, MD; Todd Albert, MD; Catherine Himo Gang, MPH; and Sheeraz Qureshi, MD, MBA*

12:12  **Paper #87**: Does the Neck Pain, Function, or Range of Motion Differ After Anterior Cervical Fusion, Cervical Disc Replacement, and Posterior Cervical Foraminotomy?
*Seungyoun Lee; Jin-Sung Kim; and Guang-Xun Lin*

12:15  **Paper #88**: Additional Fusion Surgery After Anterior Cervical Discectomy and Fusion versus Posterior Foraminotomy for Cervical Disc Herniation without Myelopathy
*Andre Samuel, MD; Michael Steinhaus, MD; Hikari Urakawa, MD; Avani Vaishnav, MBBS; Srvatisht Iyer, MD; Steven McAnany, MD; Todd Albert, MD; Catherine Himo Gang, MD; and Sheeraz Qureshi*

12:18  Discussion

12:24  **Paper #89**: Comparison of Biomechanical Stability and Rod Strain Between Anterior Column Alignment and Pedicle Subtraction Osteotomy
*Jakub Godzik, MD, MSc; Bernardo de Andrade; Anna Newcomb, BS; Jennifer Lehrman; Randy Hlubek; Gregory Mundis, Jr., MD; Juan Uribe, MD; Brian Kelly, PhD; and Jay Turner*

12:27  **Paper #90**: Assessing Correlation Between Radiographic and Intraoperative Electrophysiological Monitoring Findings Consistent with Nerve Root Encroachment for Adult Spine Patients Undergoing Elective Sacroiliac Fusion
*E. Lex Hanna, MD; Jacob Braunstein, MD; Jessica Barley, PhD; William Barfield, PhD; and John Glaser, MD*
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12:30  
**Paper #91:** A Review of Open and Minimally Invasive Surgical Techniques for Treatment of Metastatic Epidural Spinal Cord Compression in the Thoracolumbar Spine: Meta-analysis and Systematic Review  
*Mohammed Alshareef, MD; Bruce Frankel, MD; and Gibson Klapthor, BS*

12:33  
**Paper #92:** Electrospun Synthetic Bone Graft Promotes Stem Cell Function and Spinal Fusion  
*Derek Ju, MD; Juliane Glaeser, PhD; Linda Kanim; Dmitry Sheyn; and Hyun Bae, MD*

12:36  
Discussion

12:42  
**Paper #93:** The Incremental Cost of Increasing Surgical Technology in Lumbar Spine Fusion Surgery  
*Peter Passias, MD; Avery Brown; Haddy Alas; Cole Bortz; Katherine Pierce; Hamid Hassanzadeh; Lawal Labaran; Sara Naessig; Waleed Ahmad; Dennis Vasquez-Montes; Bassel Diebo; Daniel Scuibba; Pierce Nunley; Paul Park; Charla Fischer; Shaleen Vira; Themistocles Protopsaltis; Aaron Buckland; and Michael Gerling*

12:45  
**Paper #94:** Results of a Pilot Study to Characterize Pre-operative and Post-operative Opioid Use in Spine Clinic Patients  
*Yamaan Saadeh, MD; Gic-Owens Fiestan, BS; Jibran Fateh, BS; and Paul Park, MD*

12:48  
**Best Paper Award Finalist**  
**Paper #95:** Intravenous Ketorolac Substantially Reduces Opioid Use Following Lumbar Spinal Fusion: Early Results of a Randomized, Double-blinded, Placebo Controlled Trial  
*Sravisht Iyer, MD; Evangelia Zgonis; Michael Steinhaus, MD; Karim Shafi, MD; Jeffrey Varghese, MD; Daniel Stein, BS; Jingyan Yang; Todd Albert, MD; Frank Schwab, MD; Darren Lebl, MD; Han Jo Kim, MD; Matthew Cunningham, MD, PhD; James Farmer, MD; Frederico Girardi, MD; Russel Huang, MD; Sheeraz Qureshi, MD; Bernard Rawlins, MD; James Beckman, MD; and Harvinder Sandhu, MD*

12:51  
Discussion

12:55  
**Young Surgeon New Technology Lunch**

**Session 8: New Technology**  
**Mods:** Dr. K. Singh & Dr. I. Lieberman

1:40  
**Augmented vs. Virtual Reality: What’s on the Horizon?**  
J. Steinberger, MD

1:48  
**Predictive Analytics: A Way to Determine Who Should or Shouldn’t Have Surgery?**  
S. Khan, MD

1:56  
**Trends in New Technology: What’s on the Horizon?**  
J. Roh, MD

2:04  
**Q&A**

**Point/Counterpoint: The Value of Patient Specific Implants**

2:14  
**Valuable and Measurably Improves Patient Outcomes**  
I. Moss, MD

2:19  
**Limited Benefits but Increased Costs**  
S. Iyer, MD

2:24  
**Q&A**

2:28  
**Best Paper Award**

**Session 9: Moving from Proficient to Expert: Tips for How We Get Better**  
**Mod:** Dr. W. Taylor & Dr. J. Wu

2:35  
**Endoscopic Procedures and the Role of Virtual Reality**  
C. Hofstetter, MD

2:42  
**Awake MIS Fusions**  
M. Wang, MD

2:49  
**Improving your MIS Decompression Technique**  
R. Härtl, MD

2:56  
**Improving your MIS TLIF Technique**  
S. Qureshi

3:03  
**Q&A**

3:10  
**Advanced Techniques: Lateral Lumbar Interbody Fusions**  
W. Taylor
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<td>Tips for Bringing MIS into your Deformity Practice</td>
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<td>3:24</td>
<td>Expanding Your Practice to Include Endoscopic Cervical</td>
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