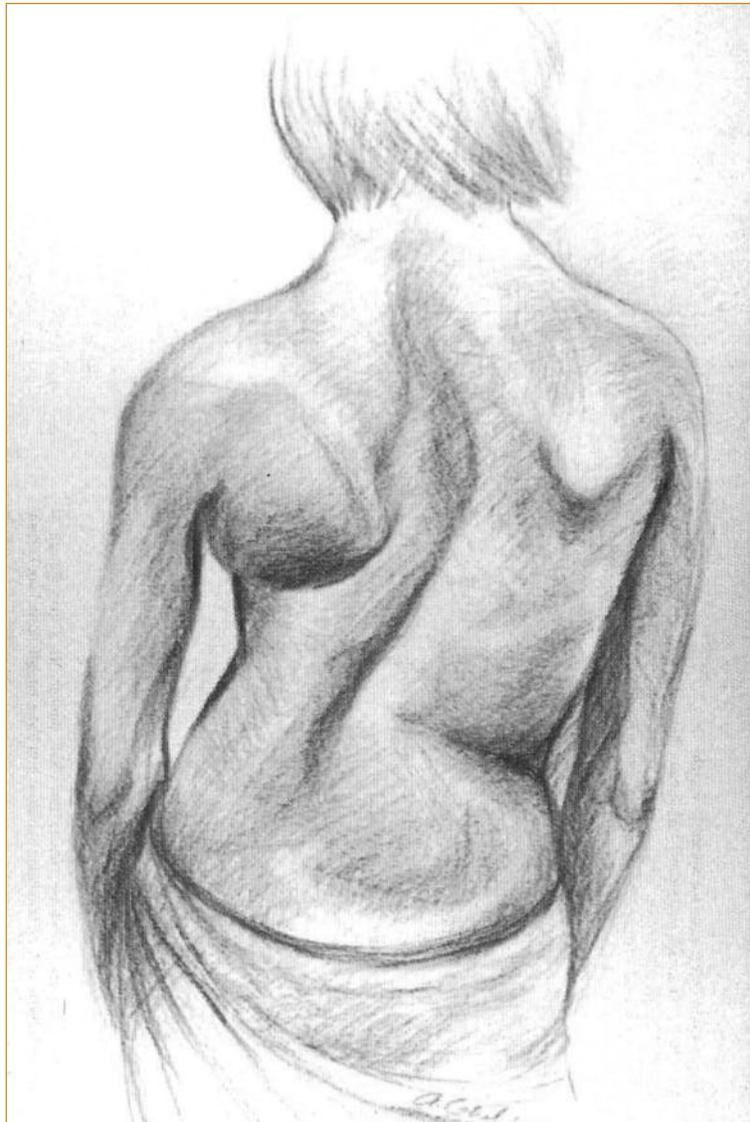




San Diego   
**Spine Foundation**  
Established in 2006



**2015 Annual Report**  
Academic Year  
August 2014 – July 2015

FOSTERING EXCELLENCE IN SPINAL EDUCATION AND RESEARCH

# RESEARCH



**Jeff Pawelek, BS**  
Research Director



**Stacie Nguyen, MPH**  
Manager: Clinical &  
Fellowship Research



**Pooria Hosseini, MD, MSc.**  
Research Fellow



**Bo Robertson**  
Research Assistant

## Publications and Presentations for the 2014-2015 Academic Year

### Book Chapters

**Fernandez JS, Kabirian N, Akbarnia BA:** *Early Onset Scoliosis: Treatment with Dual Growing Rods, In Complex Spine Cases*, Gupta, MC, Vaccaro, AR and Gupta, S, Editors. Jaypee Brothers Medical Publishers, 2015

**Stanton P, Kabirian N, Akbarnia BA:** *Sagittal Imbalance Due to Focal Kyphotic Deformity in An Adult: In Complex Spine Cases*. Gupta, MC, Vaccaro, AR and Gupta, S, Editors. Jaypee Brothers Medical Publishers, 2015

### Peer-Reviewed Publications: Adult

Fu KG, Bess S, Shaffrey CI, Smith JS, Lafage V, Schwab FJ, Burton DC, **Akbarnia BA**, Ames CP, Boachie-Adjei O, Deviren V, Hart RA, Hostin R, Klineberg E, Gupta M, Kebaish K, **Mundis GM**, Mummaneni PV, ISSG: *Adult Spinal Deformity Patients Treated Operatively Report Greater Baseline Pain and Disability Than Patients Treated Nonoperatively: However, Deformities Differ Between Age Groups*. Spine, August 1, 2014, Volume 39, Issue 17, Pp 401-1407

Smith JS, Lafage V, Shaffrey CI, Schwab F, Hostin RA, Boachie-Adjei O, Scheer JK, **Akbarnia BA**, Klineberg E, Gupta M, Deviren V, Hart RA, Burton DC, Bess S, Ames CP: *117 Outcomes of Operative and Nonoperative Treatment for Adult Spinal Deformity: A Prospective, Multicenter Matched and Unmatched Cohort Assessment with Minimum 2-Year Follow-Up*: Neurosurgery, August 2014; 61 Suppl 1: 197-8

Smith JS, Singh M, Klineberg E, Shaffrey CI, Lafage V, Schwab FJ, Protosaltis T, Ibrahim D, Scheer JK, **Mundis GM**, Gupta MC, Hostin R, Deviren V, Kebaish K, Hart R, Burton DC, Bess S, Ames CP, ISSG: *Surgical Treatment of Pathological Loss of Lumbar Lordosis (Flatback) In Patients with Normal Sagittal Vertical Axis Achieves Similar Clinical Improvement as Surgical Treatment Of Elevated Sagittal Vertical Axis*: Clinical Article. J Neurosurg Spine. 2014 Aug;21(2):160-70

Lafage V, Blondel B, Smith JS, Boachie-Adjei O, Hostin RA, Burton D, **Mundis GM**, Klineberg EO, Ames CI, **Akbarnia BA**, Bess S, Schwab F, ISSG: *Preoperative Planning for Pedicle Subtraction Osteotomy: Does Pelvic Tilt Matter?* Spine Deformity Journal, Vol. 2, Issue 5, Pp. 358-366, September 2014

**Schroerlucke SR, Steklov N, Mundis GM, Marino JF, Akbarnia BA, Eastlack RK,** *How Does a Novel Monoplanar Pedicle Screw Perform Biomechanically Relative to Monoaxial and Polyaxial Designs?* Clin Orthop Relat Res, 472(9):2826-32, September 2014

**Eastlack RK, Garfin SR, Brown CR, Meyer SS:** *Osteocel® Plus Cellular Allograft in Anterior Cervical Discectomy and Fusion (ACDF): Evaluation of Clinical and Radiographic Outcomes from A Prospective Multi-Center Study*. Spine (Phila Pa 1976), 39(22): E1331-E1337, October 2014

Protosaltis T, Schwab F, Bronsard N, Smith JS, Klineberg E, **Mundis GM**, Ryan DJ, Hostin R, Hart R, Burton D, Ames C, Shaffrey C, Bess S, Errico T, Lafage V; ISSG. *Thet1 Pelvic Angle, A Novel Radiographic Measure of Global Sagittal Deformity, Accounts for Both Spinal Inclination and Pelvic Tilt and Correlates With Health-Related Quality Of Life*. J Bone Joint Surg Am. 2014 Oct 1;96(19):1631-40

Fu KG, Bess RS, Lafage V, Ames CP, **Akbarnia BA**, Boachie-Adjei O, Burton DC, Deviren V, Hart RA, Gupta MC, Klineberg EO, Errico TH, **Mundis GM**, Hostin RA, O'Brien MF, Kebaish KM, Schwab FJ, Shaffrey CI, Smith JS, ISSG: *Operative Treatment of Adult Spinal Deformity (ASD) Improves Disease State and Physical Function Regardless of Age and Deformity Type, While Nonoperative Treatment Has No Impact: A Two-Year Prospective Analysis*. The Spine Journal Vol. 14, Issue 11, Suppl., Page S3. November 2014

Fu KG, Park P, **Mundis GM**, Anand N, La Marca F, Uribe JS, Yang MY, Kanter AD, Okonkwo DO, Fessler RG, Deviren V, **Nguyen S**, Liabaud B, **Akbarnia BA**, Shaffrey CI, ISSG: *Do MIS Deformity Interventions Result in Similar Reductions of Disability when Compared with Traditional Open Spinal Deformity Correction at One- and Two-Years? A Propensity Matched Cohort Analysis*. The Spine Journal - November 1, 2014 Volume 14, Issue 11, Supplement, Pps S152-S153

**Mundis GM, Akbarnia BA, Kanter AS, Okonkwo DO, Park P, Uribe JS, Deviren V, Anand N, Wang MY, La Marca F, Fessler RG, Nguyen S, Liabaud B, Diebo B, Eastlack RK,** ISSG: *Adult Spinal Deformity Treated with Minimally Invasive Techniques: Two-Year Multicenter Clinical and Radiographic Outcomes Study Comparing Circumferential MIS and Hybrid Surgery*. The Spine Journal - November 1, 2014, Volume 14, Issue 11, Supplement, Pps S79-S80

Smith JS, Shaffrey E, Klineberg E, Shaffrey CI, Lafage V, Schwab FJ, Protosaltis T, Scheer JK, **Mundis GM**, Fu KM, Gupta MC, Hostin R, Deviren V, Kebaish K, Hart R, Burton DC, Line B, Bess S, Ames CP; ISSG. *Prospective Multicenter Assessment of Risk Factors for Rod Fracture Following Surgery for Adult Spinal Deformity*. J Neurosurg Spine. 2014 Dec;21(6):994-1003

Scheer JK, Lafage V, Smith JS, Deviren V, Hostin R, McCarthy IM, **Mundis GM**, Burton DC, Klineberg E, Gupta M, Kebaish K, Shaffrey CI, Bess S, Schwab F, Ames CP; ISSG: *Maintenance of Radiographic Correction at 2 Years Following Lumbar Pedicle Subtraction Osteotomy Is Superior with Upper Thoracic Compared with Thoracolumbar Junction Upper Instrumented Vertebra*. Eur Spine J. 2015 Jan;24 Suppl 1: S121-30

Park P, Wang MY, Lafage V, **Nguyen S**, Ziewacz J, Okonkwo DO, Uribe JS, **Eastlack RK**, Anand N, Haque R, Fessler RG, Kanter AS, Deviren V, La Marca F, Smith JS, Shaffrey CI, **Mundis GM**, Mummaneni PV: *Comparison of Two Minimally Invasive Surgery Strategies to Treat Adult Spinal Deformity*. J Neurosurg Spine, January 2015

Sciubba DM, Scheer JK, Yurter A, Smith JS, Lafage V, Klineberg E, Gupta M, **Eastlack R**, **Mundis GM**, Protopsaltis TS, **Blaskiewicz D**, Kim HJ, Koski T, Kebaish K, Shaffrey CI, Bess S, Hart RA, Schwab F, Ames CP, ISSG: *Patients with Spinal Deformity Over the Age of 75: A Retrospective Analysis of Operative Versus Non-Operative Management*. Eur Spine J. February 2015

Scheer JK, Smith JS, Clark AJ, Lafage V, Kim HJ, Rolston JD, **Eastlack R**, Hart RA, Protopsaltis TS, Kelly MP, Kebaish K, Gupta M, Klineberg E, Hostin R, Shaffrey CI, Schwab F, Ames CP; ISSG: *Comprehensive Study of Back and Leg Pain Improvements After Adult Spinal Deformity Surgery: Analysis of 421 Patients with 2-Year Follow-Up and of The Impact of the Surgery On Treatment Satisfaction*. J Neurosurg Spine, February 2015

Scheer JK, **Mundis GM**, Klineberg E, Hart RA, Deviren V, Burton DC, Protopsaltis TS, Gupta M, Rolston JD, Bess S, Shaffrey CI, Schwab F, Lafage V, Smith JS, Ames CP; ISSG. *Recovery Following Adult Spinal Deformity Surgery: The Effect of Complications and Reoperation in 149 Patients with 2-Year Follow-Up*. Eur Spine J. 2015 Feb 6

Uribe JS, Harris JE, Beckman JM, Turner AWL, **Mundis GM**, **Akbarnia, BA**: *Finite Element Analysis of Lordosis Restoration with Anterior Longitudinal Ligament Release and Lateral Hyperlordotic Cage Placement*. Eur Spine J, March 2015

Oh T, Scheer JK, **Eastlack R**, Smith JS, Lafage V, Protopsaltis TS, Klineberg E, Passias PG, Deviren V, Hostin R, Gupta M, Bess S, Schwab F, Shaffrey CI, Ames CP, ISSG: *Cervical Compensatory Alignment Changes Following Correction of Adult Thoracic Deformity: A Multicenter Experience in 57 Patients with A 2-Year Follow-Up*, J Neurosurg: Spine, March 2015

Passias PG, Soroceanu A, Smith J, Boniello A, Yang S, Scheer JK, Schwab F, Shaffrey C, Kim HJ, Protopsaltis T, **Mundis GM**, Gupta M, Klineberg E, Lafage V, Ames C; ISSG: *Postoperative Cervical Deformity in 215 Thoracolumbar Patients with Adult Spinal Deformity: Prevalence, Risk Factors, And Impact On Patient-Reported Outcome and Satisfaction At 2-Year Follow-Up*. Spine (Phila PA 1976). 2014 Jul 1;39(15):1203-10

**Turner J**, **Akbarnia BA**, **Eastlack RK**, **Bagheri R**, **Nguyen S**, Pimenta L, Marco R, Deviren V, Uribe J, **Mundis GM**: *Radiographic Outcomes of Anterior Column Realignment for Adult Sagittal Plan Deformity: A Multicenter Analysis*. Eur Spine J, March 2015

Ferrero E, Vira S, Ames CP, Kebaish K, Obeid I, O'Brien MF, Gupta MC, Boachie-Adjei O, Smith JS, **Mundis GM**, Challier V, Protopsaltis TS, Schwab FJ, Lafage V; ISSG: *Analysis of an Unexplored Group of Sagittal Deformity Patients: Low Pelvic Tilt Despite Positive Sagittal Malalignment*. Eur Spine J. 2015 May 31

Soroceanu A, Burton DC, Diebo BG, Smith JS, Hostin R, Shaffrey CI, Boachie-Adjei O, **Mundis GM**, Ames C, Errico TJ, Bess S, Gupta MC, Hart RA, Schwab FJ, Lafage V, ISSG: *Impact of Obesity On Complications, Infection, And Patient-Reported Outcomes in Adult Spinal Deformity Surgery*. J Neurosurg Spine. 2015 Jul 31:1-9

Ryan DJ, Protopsaltis TS, Ames CP, Hostin R, Klineberg E, **Mundis GM**, Obeid I, Kebaish K, Smith JS, Boachie-Adjei O, Burton DC, Hart RA, Gupta M, Schwab FJ, Lafage V; ISSG. *T1 Pelvic Angle (TPA) Effectively Evaluates Sagittal Deformity and Assesses Radiographical Surgical Outcomes Longitudinally*. Spine (Phila PA 1976). 2014 Jul 1;39(15):1203-10

## Peer-Reviewed Publications: Pediatric

**Kabirian N**, **Akbarnia BA**, **Pawelek, JB**, Alam M, **Mundis GM**, Acacio R, Thompson GH, Marks DS, Gardner A, Sponseller PD, Skaggs DL, GSSG: *Deep Surgical Site Infection Following 2344 Growing-Rod Procedures for Early-Onset Scoliosis*: J Bone Joint Surg Am. 2014; 96 (15): E128 (1-8); August 2014

Williams BA, Matsumoto H, McCalla DJ, **Akbarnia BA**, Blakemore LC, Betz RR, Flynn JM, Johnston CE, McCarthy RE, Roye DP, Skaggs DL, Smith JT, Snyder BD, Sponseller PD, Sturm PE, Thompson GH, Yazici M, Vitale MG: *Development and Initial Validation of the Classification of Early Onset Scoliosis (C-EOS)*; J Bone Joint Surg Am. 2014; 96 (16): 1359-1367, August 20, 2014

Shah S, Karatas AF, Dhawale AA, Dede O, **Mundis GM**, Holmes L, Yorgova P, Neiss G, Johnston CE, Emans JB, Thompson GH, **Pawelek JP**, **Akbarnia BA**, GSSG: *The Effect of Serial Growing Rod Lengthening On the Sagittal Profile and Pelvic Parameters in Early-Onset Scoliosis*. Spine Volume 39, Number 22, Pp E1311-E1317. October 2014

Maher A, **Kabirian, N**, **Akbarnia, BA**, **Flippin, M**, Tomlinson, T, **Kostial, P**, **Bagheri, R**: *Effects of Posterior Distraction Forces On Anterior Column Intradiscal Pressure in The Dual Growing Rod Technique*. Journal of Orthopaedic Science, DOI: 10.1007/S00776-014-0646-8. October 2014

**Akbarnia BA**, Yaszay B, Yazici M, **Kabirian N**, Blakemore LC, Strauss KR, Glaser D: *Biomechanical Evaluation of 4 Different Foundation Constructs Commonly Used in Growing Spine Surgery: Are Rib Anchors Comparable to Spine Anchors?* Spine Deformity Journal 2 (2014) Pp 437-443. November 2014



Gregory M. Mundis, Jr., MD presenting at 2015 AAOS Annual Meeting

Paloski MD, Sponseller PD, **Akbarnia BA**, Thompson GH, Skaggs DL, **Pawelek JB**, Nguyen PT, Odum SM, GSSG: Is There an Optimal Time to Distract Growing Rods? Spine Deformity Journal 2 (2014) Pp 467-470. November 2014

Myung KS, Skaggs DL, Johnston CE, **Akbarnia BA**, GSSG: The Use of Pedicle Screws in Children 10 Years of Age and Younger with Growing Rods. Spine Deformity Journal 2 (2014) Pp 471-474. November 2014

**Arandi NR**, **Pawelek JB**, **Kabirian N**, Thompson GH, Emans JB, Flynn JM, Dormans JP, **Akbarnia BA**, GSSG: Do Thoracolumbar/Lumbar Curves Respond Differently to Growing Rod Surgery Compared with Thoracic Curves? Spine Deformity Journal 2 (2014) Pp 475-480. November 2014

Yamaguchi DT, Skaggs DL, Mansour S, Myung KS, Yazici M, Johnston CE, Thompson GH, Sponseller PD, **Akbarnia BA**, Vitale MG, GSSG: Are Rib Spine Anchors Protective Against Breakage of Growing Rods? Spine Deformity Journal 2 (2014) Pp 489-492. November 2014

**Akbarnia BA**, **Pawelek JB**, Cheung KMC, Demirkiran G, Elsebaie H, Emans JB, Johnston CE, **Mundis GM**, Noordeen H, Skaggs DL, Sponseller PD, Thompson GH, Yazay B, Yazici M, GSSG: Traditional Growing Rods Versus Magnetically Controlled Growing Rods for The Surgical Treatment of Early-Onset Scoliosis: A Case-Matched 2-Year Study. Spine Deformity Journal 2 (2014) Pp 493-497. November 2014

El-Hawary R, **Akbarnia BA**: Early Onset Scoliosis – Time for Consensus: Letter to The Editor. Spine Deformity Journal. Volume 3, Issue 2, Pp 105-106. March 2015

Barrett KK, Lee C, Myung K, Johnston C, Shah SA, **Akbarnia BA**, Skaggs DL: The Effect of Growing Rod Treatment On Hemoglobin and Hematocrit Levels in Early-Onset Scoliosis. Journal of Pediatric Orthopaedics, April 2015

Schwend RM, Schmidt JA, Reigrut JL, Blakemore LC, **Akbarnia BA**: Patterns of Rib Growth in The Human Child. Spine Deformity Journal, Volume 3 (2015) Pp 297-302. July 2015

## Poster Exhibits – Adult

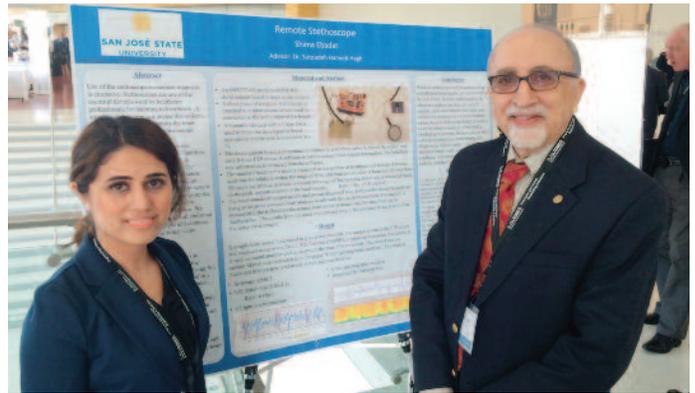
Funao H, Naef FA, Lafage v, Schwab FJ, **Mundis GM**, McCarthy I, Hart RA, Hostin R, Smith JS, Bess S, Ames CP, Kebaish K: Time Course Changes of Health Related Quality of Life after Three- Column Osteotomies in Adult Spinal Deformity.



Sciubba DM, Scheer JK, Smith JS, Klineberg E, Gupta MC, **Mundis GM**, Protosaltis TS, Lafage V, Kim HJ, Koski T, Kebaish K, Shaffrey CI, Bess S, Hart RA, Schwab FJ, Ames CP, ISSG: Elderly Patients Over 75 Years Undergoing Reconstructive Spinal Deformity Surgery Have Significantly Improved Health-Related Quality of Life Measures versus Those Managed Non-Operatively Despite High Surgical Complication Rate.



Klineberg EO, Gupta MC, **Nguyen S**, Lafage V, Ames CP, Burton DC, Hart RA, Deviren V, **Akbarnia BA**, **Mundis GM**, Shaffrey CI, Smith JS, Protosaltis, TS, Fu JG, Kebaish KM, Cunningham ME, Kelly MP, Schwab FJ, Errico TJ, Hostin Ra, Kim HJ, ISSG: Posterior Surgical Correction with or Without Interbody in Matched Curves Provides Similar Correction in Adult Spinal Deformity.



Behrooz A. Akbarnia, MD visiting a poster session at San Jose State University

Soroceanu A., Burton DC, Smith JS, Deviren V, Shaffrey CI, Boachie-Adjei O, **Akbarnia BA**, Ames CP, Errico TJ, Bess RS, Hostin RA, Hart RA, Schwab FJ, Lafage, ISSG: Incidence of Radiographic and Implant-Related Complications in Adult Spinal Deformity Surgery: Patient Risk Factors and Impact On HRQOL.



Fu KG, Park P, **Mundis GM**, Anand N, La Marca F, Uribe JS, Wang MY, Kanter AS, Okonkwo DO, Ressler RG, Deviren V, **Nguyen S**, Liabaud B, **Akbarnia BA**, Shaffrey CI, ISSG: Do MIS Deformity Interventions Result in Similar Reductions of Disability When Compared with Traditional Open Spinal Deformity Correction at One and Two-Years? A Propensity Matched Cohort Analysis.



Liu S, Smith JS, Hostin RA, **Mundis GM**, Ames CP, Bess RS, Hart RA, Schwab FJ, Lafage V: Non-operative Benefit in Spinal Deformity: Predictors for Reaching a Minimal Clinically Important Difference.



## Poster Exhibits - Pediatric

Cheung KM, Kwan K, Ferguson J, Nnadi C, Alanay A, Yazici M, Demirkiran GH, **Akbarnia BA**: Proximal Junctional Kyphosis Associated with Magnetically Controlled Growing Rod Surgery for Early Onset Scoliosis.



**Akbarnia BA**, **Pawelek JB**, Cheung K, Demirkiran G, Elsebaie H, Emans J, Johnston CE, Mundis GM, Noordeen H, Shaw M, Skaggs DL, Sponseller PD, Thompson GH, Yazay G, Yazici M, GSSG: Traditional Growing Rods Versus Magnetically Controlled Growing Rods in Early Onset Scoliosis: A Case-Matched Two Year Study.



Paloski M, Sponseller PD, **Akbarnia BA**, Thompson GH, Skaggs DL, **Pawelek J**, Nguyen PT, Odum SM, GSSG: Is There an Optimal Time to Distract Dual Growing Rods?



England K, Ledonio CGT, Polly DW, **Akbarnia BA**, Hoggard E: Pediatric Thoracic Volume Modeling for Early Onset Scoliosis: A Validation Study.



Brooks JT; Jain A, Perez-Grueso FS, Skaggs DL, Thompson GH, **Akbarnia BA**, Sponseller PD, GSSG: Pelvic Anchor Outcomes in Growing Rod Constructs: An Analysis of Patients with A Minimum of 4 Years of Post-Operative Follow-Up.



Hosseini P, Pawelek J, Nguyen S, Thompson GH, Shah SA, Flynn JM, Dormans JP, Akbarnia BA, GSSG: *Is There a Relationship Between Lengthening Intervals and Rod Fracture in Traditional Growing Rod Surgery for The Treatment of Early Onset Scoliosis?*

 SNA

## Podium Presentations – Adult

Smith JS, Lafage V, Shaffrey CI, Schwab FJ, Hostin R, Boachie-Adei O, Akbarnia BA, Klineberg E, Gupta MC, Deviren V, Hart RA, Burton DC, Bess S, Ames CP, ISSG: *Outcomes of Operative and Nonoperative Treatment for Adult Spinal Deformity (ASD): A Prospective, Multicenter Matched and Unmatched Cohort Assessment with Minimum Two Year Follow Up.*

 SRS 2014

Soroceanu A, Burton D, Tanzi E, Smith J, Hostin R, Shaffrey C, Boachie-Adjei O, Akbarnia BA, Ames C, Errico T, Bess RS, Deviren V, Hart RA, Schwab F, Lafage V, ISSG: *Incidence of Radiographic and Implant-Related Complications in Adult Spinal Deformity Surgery, Patient Risk Factors and Impact On HRQOL.*

 SRS 2014

 ISASS

McCarthy I, Robinson c, O'Brien MF, Gupta MC, Ames CP, Lafage V, Hart RA, Bess R, Shaffrey CI, Mundis GM, Schwab FJ, Kebaish K, Smith JS, Hostin R, ISSG: *Long-Term Cost-Effectiveness of Adult Spinal Deformity Surgery (ASD).*

 SRS 2014

Soroceanu A, Passias PG, Boniello AJ, Scheer JK, Schwab FJ, Shaffrey CI, Kim HJ, Protosaltis TS, Mundis GM, Gupta MC, Klineberg E, Lafage V, Smith JS, Ames CP, ISSG: *Risk of Development of New Onset Post-Operative Cervical Deformity (CD) in Thoracolumbar Adult Spinal Deformity (ASD) and Effect on Clinical Outcomes at Two-Year Follow Up.*

 SRS 2014

Ames CP, Passias PG, Soroceanu A, Boniello AJ, Scheer JK, Schwab FJ, Shaffrey CI, Kim HJ, Protosaltis TS, Mundis GM, Gupta MC, Klineberg E, Lafage V, Smith JS, ISSG: *The Presence of Pre-Operative Cervical Deformity in Adult Spinal Deformity Patients is a Strong Predictor of Inferior Outcomes and Failure to Reach MCID at Two-Year Follow Up: Analysis of 235 Patients.*

 SRS 2014

Bess S, Line B, Lafage V, Ames CP, Boachie-Adjei, Burton DC, Hart RA, Gupta MC, Klineberg E, Mundis GM, Hostin R, Schwab FJ, Shaffrey CI, Smith JS, ISSG: *Intermediate Dosing of Recombinant Human Bone Morphogenetic Protein-2 (rhBMP-2) Improves Fusion Rates with No Increase in Major Complications but does not Improve Health Related Quality of Life for Adult Spinal Deformity (ASD) at Minimum Two Years: A Prospective, Multicenter Analysis.*

 SRS 2014  INASS

Zebala LP, Naef FA, Funao H, Lafage V, Klineberg E, Kelly MP, Gupta MC, Kim HJ, Mundis GM, Bess S, Hart RA, Schwab FJ, Ames CP, Kebaish K, ISSG: *Revision Surgery in Adult Spinal Deformity Patients Achieves Similar Improvement in HRQOL Compared to Primary Surgery: Prospective, Multicenter Analysis.*

 SRS 2014

Sciubba DM, Scheer JK, Smith JS, Lafage V, Klineberg E, Gupta MC, Mundis GM, Protosaltis TS, Kim HJ, Koski T, Hamilton DK, Shaffrey CI, Bess S, Hart RA, Ames CP, ISSG: *Patients with Instrumented Fusions to the Ilium Report Greater Impairment of Perineal Care with Construct Extension to the Upper Thoracic versus Extension to the Thoracolumbar Junction with Two-Year Follow Up.*

 SRS 2014

Tohmeh AG, Isaacs RE, Dooley ZA, Turner AW, Mundis GM: *Decreasing Long Construct Pedicle Screw Reduction and Residual Forces using a Computer-Assisted Rod Bending System.*

 SRS 2014

Smith JS, Lafage V, Shaffrey C, Schwab FJ, Hostin RA, Boachie-Adjei O, Akbarnia BA, Klineberg EO, Gupta MC, Protosaltis TS, Scheer JK, Fu KG, Mundis GM, Kebaish KM, Line B, Kim HJ, Deviren V, Hart RA, Burton DC, Bess RS, Ames CP, ISSG: *Outcomes of Operative and Nonoperative Treatment for Adult Spinal Deformity (ASD): A Prospective, Multicenter Matched and Unmatched Cohort Assessment with Minimum Two-Year Follow-Up.*

 INASS

Bess RS, Lafage V, Ames CP, Akbarnia BA, Boachie-Adjei O, Burton DC, Deviren V, Hart RA, Gupta MC, Klineberg EO, Errico TJ, Mundis GM, Hostin RA, O'Brien MF, Kebaish KM, Schwab FJ, Shaffrey CI, Smith JS, ISSG: *Operative Treatment of Adult Spinal Deformity (ASD) Improves Disease State and Physical Function Regardless of Age and Deformity Type, While Nonoperative Treatment Has No Impact: A Two-Year Prospective Analysis.*

 INASS

Liu S, Liabaud B, Smith JS, Hostin RA, Shaffrey CI, Cunningham ME, Mundis GM, Ames CP, Burton DC, Bess RS, Akbarnia BA, Hart RA, Schwab FJ, Lafage V, ISSG: *Reaching Minimal Clinically Important Difference Through Nonoperative Treatment of Adult Spinal Deformity.*

 INASS

Mundis GM, Akbarnia BA, Kanter AS, Okonkwo DO, Park P, Uribe JS, Deviren V, Anand N, Wang MY, La Marca F, Fessler RG, Nguyen S, Liabaud B, Diebo BG, Eastlack RK, ISSG: *Adult Spinal Deformity Treated with Minimally Invasive Techniques: Two-Year Multicenter Clinical and Radiographic Outcomes Study Comparing Circumferential MIS and Hybrid Surgery.*

 INASS

Bess RS, Line B, Lafage V, Akbarnia BA, Ames CP, Boachie-Adjei O, Burton DC, Deviren V, Fu, KG, Hart RA, Hamilton J, Gates ML, Kebaish KM, Klineberg EO, Gupta MC, Mundis GM, Hostin RA, Schwab FJ, Shaffrey CI, Smith JS, ISSG: *Prospective Analysis of Location of Rbmp-2 Use in Adult Spinal Deformity (ASD) Surgery Does Not Correlate with Site Specific Complications and Generates Greater Fusion Rates at Minimum Two-Year Follow-Up.*

 INASS

Bess RS, Line B, Lafage V, Akbarnia BA, Ames CP, Boachie-Adjei O, Burton DC, Deviren V, Kim HJ, Hart RA, Fu KG, Kebaish KM, Klineberg EO, Gupta MC, Mundis GM, Hostin RA, O'Brien MF, Schwab FJ, Shaffrey C, Smith JC, ISSG: *Peak Timing and Associated Risk Factors for Specific Complications Following Adult Spinal Deformity (ASD) Are Identifiable: A Guide for Surgeons and Patients.*

 INASS

Klineberg EO, Gupta MC, Nguyen S, Lafage V, Ames CP, Burton DC, Hart RA, Deviren V, Akbarnia BA, Mundis GM, Shaffrey CI, Smith JS, Protosaltis TS, Fu KG, Kebaish KM, Cunningham ME, Kelly MP, Schwab FJ, Errico TJ, Hostin RA, Kim HA, ISSG: *Anterior Posterior Versus Posterior Only Correction in Adult Spinal Deformity Matched Curves: Similar Correction with More Intraoperative, But Fewer Late Implant Complications.*

 INASS

Soroceanu A, Passias PG, Boniello AJ, Yang S, Kim HJ, Mundis GM, Klineberg EO, Smith JS, Ames C: *Risk of New Onset Postop Cervical Deformity in Thoracolumbar Adult Spinal Deformity and Clinical Outcomes at 2 Years.*

 AAOS

Challier V, Liabaud B, Ames C, Kebaish K, Obeid I, Hostin R, Klineberg E, Boachie-Adjei O, Smith J, **Akbarnia BA**, Liu S, Protosaltis T, Schwab F, Lafage V, ISSG: *Three-Column Osteotomies in Elderly Patients: Is It Worth It?*



**Mundis GM**, Deviren V, Uribe JS, Nunley P, Mummaneni PV, Anand N, **Eastlack RK**, Park P, Okonkwo DO, Wang MY, Bess S, Kanter AS, Fessler RG, **Nguyen S**, **Akbarnia BA**, ISSG: *Critical Analysis of Sagittal Plane Deformity Correction with Minimally Invasive Adult Spinal Deformity Surgery: A 2-Year Follow Up Study.*



**Turner JD**, **Nguyen S**, **Akbarnia BA**, Okonkwo DO, Kanter AS, Liabaud B, **Eastlack RK**, **Blaskiewicz D**, **Mundis GM**, ISSG: *Stand-Alone Multi-Level Lateral Lumbar Interbody Fusion for The Treatment of Adult Spinal Deformity.*



Theologis A, **Nguyen S**, **Mundis GM**, **Akbarnia BA**, **Eastlack RK**, Wang MY, Mummaneni PY, Uribe JS, Okonkwo DO, Anand N, Kanter AS, Park P, Fessler RG, Deviren V, ISSG: *Circumferential Fusion for Thoracolumbar Adult Deformity Surgery: Effect of Open Versus Percutaneous Pedicle Screw Fixation After MIS Lateral Interbody Fusion.*



Uribe JS, Mummaneni PV, Okonkwo DO, Nunley P, **Eastlack RK**, Park P, **Akbarnia BA**, Shaffrey CI, Deviren V, **Nguyen S**, Anand N, Kanter AS, Fessler RG, **Mundis GM**, ISSG: *Does MIS Surgery Allow for Shorter Constructs in The Surgical Treatment of ASD?*



Theologis A, **Mundis GM**, Okonkwo D, Mummaneni PV, Shaffrey CI, Fessler R, Bess S, Schwab FJ, Diebo B, Burton DC, Hart RA, Ames CP, Deviren V, ISSG: *Utility of Lateral Interbody Fusion of the Thoracolumbar Curve's Apex in Adult Deformity Surgery.*



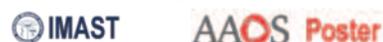
**Hosseini, P**: *Is There a Role for an Ultrasonic Bone-Cutting Device in Adult Spine Deformity? A Safety and Reproducibility Study.*

## STEGO 12

Bess S, Line B, Klineberg EO, Ames CP, **Akbarnia BA**, Boachie-Adjei O, Burton DC, Gates MI, Hamilton DK, Hart RA, Hostin R, Lafage V, **Mundis GM**, Schwab FJ, Shaffrey CI, Smith JS, ISSG: *Propensity Score Matched Analysis of Adult Spinal Deformity (ASD) Patients Demonstrates That Interbody and/or Posterolateral Use of Recombinant Human Bone Morphogenetic Protein-2 (Rhbmp-2) Improves Fusion Rates Without Increasing Complications.*



Than KD, Park P, Fu, KMG, **Nguyen S**, Wang MY, Shaffrey CI, Bess S, **Akbarnia BA**, Deviren V, Uribe JS, Okonkwo DO, **Mundis GM**, Mummaneni PV, ISSG: *Clinical and Radiographic Parameters Associated with Best Versus Worst Clinical Outcomes in Minimally Invasive Deformity Surgery.*



Sarwahi V, Wendolowski ST, Wang D, Lo Y, Pawar A, Lebowhl NH, Thompson GH, **Akbarnia BA**: *Blood Loss, Transfusion, And Conservation Trends in Scoliosis Surgery Over the Past 10 Years: Meta-Analysis of SRS Meeting Abstracts by The Historical Committee.*



James D. Bruffey, MD at 2015 SDFS Annual Visiting Professorship Meeting

Kim HJ, Iyer S, Zebala LP, Kelly MP, Sciubba DM, Protosaltis TS, Gupta MC, Neuman BJ, **Mundis GM**, Ames CP, Smith JS, Hart RA, Burton DC, Klineberg EO: *Neurologic Complications in Adult Spinal Deformity Surgery: Incidence, Risk Factors and Outcomes in 558 Patients.*



Soroceanu A, Smith JS, Lafage V, Klineberg EO, Ailon T, Ames CP, Shaffrey CI, Gupta MC, **Mundis GM**, Kebaish K, Sciubba DM, Hart RA, Hostin R, Schwab FJ, ISSG: *Larger Global Sagittal Correction with Pedicle Subtraction Osteotomy is Associated with Increased PJK and Major Complications, but Better Correction and HRQL Scores.*



Buckland AJ, Vigdorichik J, Lafage R, **Mundis GM**, Gum JL, Kelly MP, Hart RA, Ames CP, Smith JS, Bess S, Errico TJ, Schwab FJ, Lafage V, ISSG, Protosaltis TS: *Acetabular Anteversion Changes in Spinal Deformity Correction: Implications for Hip and Spine Surgeons.*



Protosaltis TS, Lafage R, Lafage V, Sciubba DM, Hamilton DK, Smith JS, Passias PG, Soroceanu A, **Mundis GM**, Klineberg EO, Hart RA, Shaffrey CI, Schwab FJ, Ames CP, ISSG: *Novel Cervical Angular Measures Account for Both Upper Cervical Compensation and Sagittal Alignment.*



Smith JS, Klineberg EO, Protosaltis TS, Gupta MC, Burton DC, Deviren V, **Eastlack RK**, Gates LF, Passias PG, **Mundis GM**, Hamilton DK, Hart RA, Bess S, Ames CP, ISSG: *Assessment of Surgical Treatment Strategies for Moderate to Severe Adult Cervical Deformity Reveals Marked Variation in Approaches, Osteotomies and Fusion Levels.*



Lafage R, Lafage V, Protosaltis TS, Hart RA Passias PG, Klineberg EO, Smith JS, Neuman BJ, Hamilton DK, Jain A, **Mundis GM**, Zebala KP, Shaffrey CI, Ames CP, ISSG: *Focal and Dynamic Cervical Alignment Pathology Correlates with Myelopathy Severity in Cervical Deformity Patients.*



Smith JS, Lafage V, Shaffrey CI, Protosaltis TS, Passias PG, Schwab FJ, O'Brien MF, Gupta MC, **Mundis GM**, Hart RA, Kim HJ, Klineberg EO, Riew D, Ames CP: *ISSG: Prospective Multicenter Assessment of Early Complication Rates Associated with Adult Cervical Deformity (ACD) Surgery in 78 Patients.*



Protopsaltis TS, Lafage R, Lafage V, Schwab FJ, Smith JS, Passias PG, Spiegel MA, Sciubba DM, **Mundis GM**, Kim HJ, Klineberg EO, Hart RA, Shaffrey CI, Ames CP, ISSG: *Towards a Cervical Deformity Outcome Instrument: Principal Component Analysis of 89 HRQL Questions in 476 Patients with Cervical Deformity.*



Klineberg EO, Passias PG, Jalai C, Worley N, Sciubba DM, Gupta MC, Soroceanu A, Zebala LP, **Mundis GM**, Kim HJ, Hamilton DK, Hart RA, Ames CP, ISSG: *Predicting Extended Length of Hospital Stay in an Adult Spinal Deformity Surgical Population.*



Scheer JK, Smith JS, Schwab JF, Lafage V, Shaffrey CI, Bess S, Daniels AH, Hart RA, Protopsaltis TS, **Mundis GM**, Ailon T, Burton DC, Klineberg EO, Ames CP, ISSG: *Development of a Preoperative Predictive Model for Intra- or Peri-Operative Major Complications with High Accuracy Validated with 558 ASD Patients.*



**Hosseini, P:** *Rescrubbing A New Technique to Decrease Surgical Site Infection.* Orthopedic Fellows Research Forum, Green Hospital, San Diego, USA, July 16, 2015



SCORE

**Choi EH:** *Implant Complications After Magnetic-Controlled Growing Rods for Early Onset Scoliosis: A Multicenter Retrospective Review.* 2015 San Diego Spine Foundation Visiting Professorship Annual Meeting.



SCORE

**Nourian AA:** *Fusion Rates of Anterior Lumbar Interbody Fusion Via Retroperitoneal Approach Using BMP-2 Versus Allograft.*



SCORE

## Podium Presentations - Pediatric

Poe-Kochert C, Shannon C, **Pawelek J**, Thompson GH, Hardesty C, Marks DS, **Akbarnia BA**, McCarthy RE, Emans JB, GSSG: *Final Fusion After Growing Rod Treatment for Early Onset Scoliosis: Is It Really Final?*



Dr. Mundis presents at 2015 IMAST meeting in Kuala Lumpur, Malaysia

Cheung KMC, Kwan K, Ferguson J, Nnadi C, Alanay A, Yazici M, Demirkiran GH, **Akbarnia BA:** *Reoperation After Magnetically Controlled Growing Rod Implantation: A Review of 23 Patients with Minimum of Two-Year Follow Up.*



Yaszay B, **Kabirian N**, **Mundis GM**, **Pawelek J**, Bartley CE, **Akbarnia BA:** *EOS Imaging System Is Available for Early Onset Scoliosis and Can Reduce Ionizing Radiation Exposure.*



Goldstein M, **Kabirian N**, **Pawelek J**, **Arandi N**, **Mundis GM**, Yaszay B, Newton PO, **Akbarnia, BA:** *Quantifying Anesthesia Exposure in Growing Rod Treatment for Early Onset Scoliosis.*



**Pawelek J**, Yaszay B, **Nguyen S**, Newton PO, **Mundis GM**, **Akbarnia BA**, GSSG, HSG: *Case-Matched Comparison of Spinal Fusion Versus Growing Rods for Progressive Idiopathic Scoliosis in Skeletally Immature Patients.*



Schwend RM, Schmidt J, Blakemore LC, Regrut JL, **Akbarnia BA:** *Coupled Symmetry and Pattern of Rib Growth in The Growing Human.*

ICEOS

Schwend RM, Blakemore LC, Schmidt JA, **Akbarnia, BA:** *Growth Patterns of the Neurocentral Synchondrosis in Immature and Growing Vertebra.*

ICEOS

Cheung KMC, Cheung JPY, Kwan K, Ferguson J, Nnadi C, Alanay A, Yazici M, Demirkiran GH, Helenius IJ, **Akbarnia BA:** *Complications of Magnetically Controlled Growing Rod Surgery: Multicenter Study of 26 Patients with Medium-Term Follow-Up.*

ICEOS

Brooks JT, Jain A, Perez-Grueso FS, Skaggs DL, Thompson GH, **Akbarnia BA**, Sponseller PD, GSSG: *Pelvic Anchor Outcomes in Growing Rod Constructs: An Analysis of Patients with A Minimum of 4 Years of Postoperative Follow-Up.*

ICEOS

Matson DM, Ledonio C, Polly DW, England K, **Pawelek JB**, **Akbarnia BA:** *Thoracic Volume Modeling of Growing Spine Interventions in Early Onset Scoliosis.*

ICEOS ISASS IMAST

Jain A, Sponseller PD, Modhia U, Shah SA, Thompson GH, **Pawelek JB**, **Akbarnia, BA**, GSSG: *Can No Final Fusion Produce Results Equal to Final Fusion After Growing Rod Treatment?*

ICEOS

Ledonio CGT, Polly DW, **Akbarnia BA**, England K, **Pawelek J**, Matson D: *Quantitative Thoracic Volume Modeling of Growing Spine Interventions: Pilot Case Study.*

ISASS

Cheung KMC, Kwan K, Ferguson J, Nnadi C, Alanay A, Yazici M, Demirkiran, Helenius I, **Akbarnia BA:** *Re-Operation After Magnetically Controlled Growing Rod Implantation: A Review of 26 Patients with Minimum Two-Year Follow Up.*

POSNA EPoS

Repko M, Grevitt M, Aydinli U, Carl A, **Akbarnia BA**, Nnadi C, Seme S, Crandall DG: *Novel Posterior Apical Short-Segment Correction of Adolescent Idiopathic Scoliosis: A Prospective Multi-Center Study*



Jain A, Sponseller PD, Modhia U, Shah SA, Thompson GH, Emans JB, Pawelek J, Akbarnia BA, GSSG: Can A "Final Fusion" Procedure Be Avoided in EOS Patients Who Reach Skeletal Maturity After Growing Rod Treatment?

**POSNA AAOS Poster**

Pawelek J, Cheung KMC, Kwan K, Ferguson JA, Nnadi C, Alanay A, Yazici M, Demirkiran GH, Helenius I, Akbarnia, BA: *Proximal Junctional Kyphosis Associated with Magnetically Controlled Growing Rod Surgery.*

**POSNA**

Polly DW, Ackerman SJ, Schneider KBA, Pawelek JB, Akbarnia BA: *Cost Analysis of Magnetically-Controlled Growing Rods Compared with Traditional Growing Rods for Early Onset Scoliosis in The United States.*

**IMAST**

Keskinen H, Helenius IJ, Nnadi C, Noordeen HH, Yaszay B, Ferguson JA, Gregg T, Senkooylu A, Cheung KMC, Hosseini P, Pawelek JB, Mundis GM, Akbarnia BA: *Comparison of Primary Versus Conversion Surgery with MCGR Rods in Children with EOS.*

**IMAST**

Brooks J, Jain A, Perez-Grueso FS, Skaggs DL, Thompson GH, Akbarnia BA, Sponseller PD, GSSG: *Outcomes of Pelvic Fixation in Growing Rod Constructs: An Analysis of Patients with A Minimum of Four-Year Follow Up.*

**IMAST**

Choi E, Hosseini P, Mundis GM, Akbarnia BA, Berk HR, Helenius IJ, Ferguson JA, Gregg T, La Rosa G, Alanay A, Senkooylu A, Cheung KMC, Pawelek JB, Yaszay B: *Implant Complications After Magnetically-Controlled Growing Rods for Early Onset Scoliosis: A Multicenter Retrospective Review.*

**IMAST**

Cheung KMC, Kwan K, Samartzis D, Alanay AA, Ferguson JAI, Nnadi C, Helenius IJ, Yazici M, Demirkiran GH, Akbarnia BA: *Effects of Frequency of Distraction in Magnetically-Controlled Growing Rod Lengthening on Outcomes and Complications.*

**IMAST**

Jain A, Sponseller PD, Shah SA, Thompson GH, Pawelek JB, Akbarnia BA, GSSG: *Can "No Final Fusion" Produce Equal Results to Final Fusion After Growing Rod Treatment?*

**IMAST**

## Invited Speakers:



**Behrooz A. Akbarnia, MD**

Early Onset Scoliosis, What We Know as of 2014. Visiting Professor – Orthopedic Grand Rounds 2014, Nemours / Alfred I. Du Pont Hospital for Children, Wilmington, Delaware, August 13, 2014

Early Onset Scoliosis Management. 2014 Scoliosis Research Society Traveling Fellows Day at Rady Children's Hospital, San Diego, California, August 29, 2014

Lateral Approach in Adult Spine Deformity: Dokkyo University, Tokyo, Japan. November 7, 2014

XLIF in Adult Sagittal Deformity: XLIF Seminar, Tokyo, Japan, November 8, 2014



Robert K. Eastlack, MD at 2014 SRS Annual Meeting in Anchorage, Alaska

Lateral Approaches for Adult Spinal Deformity: Global Spine Outreach Annual Symposium, Decision Making and Treatment, Warsaw, Poland; November 22, 2014

Technology Has Improved the Care of Children with Early Onset Scoliosis. San Jose Biomedical Device Conference, San Jose State University, San Jose, California, March 31, 2015

Magnetic Growing Rod Systems for Early Onset Scoliosis (MCGR). Pediatric Spinal Deformity on the Cutting Edge V, Coral Gables, Florida, April 10-11, 2015

Clinical Importance of Global Alignment: In Global Spinal Alignment: It Matters Workshop. International Society for The Advancement of Spine Surgery. San Diego, California, April 15-17, 2015

Noninvasive Lengthening Methods for The Growing Spine – The Paradigm Shift Allows Us to Do More Growing Rods. Annual Meeting of the Pediatric Orthopaedic Society Of North America. Atlanta, Georgia, April 29 – May 2, 2015

Magnetic Growing Systems for Early Onset Scoliosis (MCGR). EOS Seminar, Nagoya, Japan. May 15, 2015

Early Onset Scoliosis (Eos): What Do We Know in 2015? EOS Seminar, Nagoya, Japan. May 15, 2015

History and Origin of Scoliosis Research Society and Evolution of Spine Deformity Care. Shinanomachi Spinal Deformity Symposium. Keio University, Tokyo, Japan. May 19, 2015

MIS Applications in Adult Spinal Deformity. Shinanomachi Spinal Deformity Symposium. Keio University, Tokyo, Japan. May 19, 2015

History and Evolution of Spine Deformity Care. SRS Traveling Fellowship Tour. General Hospital of Armed Police Forces, Beijing, China. May 22, 2015

Magnetic Growing Systems (MCGR) For Early Onset Scoliosis. SRS Traveling Fellowship Tour. General Hospital of Armed Police Forces, Beijing, China. May 22, 2015

History and Evolution of Spine Deformity Care. SRS Traveling Fellowship Tour. Peking Union Medical College Hospital, Beijing, China May 23, 2015

Magnetic Growing Systems (MCGR) For Early Onset Scoliosis. SRS Traveling Fellowship Tour. Peking Union Medical College Hospital, Beijing, China May 23, 2015

Historical Preview of SRS and Evolution of Spinal Deformity Care. Nanjing Drum Tower Hospital-SRS Spine Symposium On Spinal Deformity. Nanjing, China. May 26, 2015

Less Invasive Surgery for Adult Spinal Deformity: Does It Work? Nanjing Drum Tower Hospital-SRS Spine Symposium On Spinal Deformity. Nanjing, China. May 26, 2015

Early Onset Scoliosis (Eos): What Do We Know in 2015? 32<sup>nd</sup> Spring Congress, Korean Society of Spine Surgery. Pyeongchang, Korea. May 29, 2015

Magnetic Growing Systems For Early Onset Scoliosis (MCGR). University of Hong Kong Symposium with SRS Traveling Fellows. Hong Kong, China June 1, 2015

Less Invasive Surgery for Adult Spinal Deformity: Does It Work? Chinese University of Hong Kong Symposium with SRS Traveling Fellows. Hong Kong, China. June 2, 2015

EOS - What Do We Know in 2015? Spine Grand Rounds, Department of Orthopaedic Surgery, Cedar Sinai Medical Center, Los Angeles, California, June 10, 2015

Early Onset Scoliosis Management – What Do We Know in 2015? 2015 San Diego Spine Foundation Visiting Professorship Annual Meeting

History and Origin of Scoliosis Research Society and Evolution of Spine Deformity Care 2015 San Diego Spine Foundation Visiting Professorship Annual Meeting



**Gregory M. Mundis, Jr., MD**

Innovative and Advanced Surgery of the Degenerative and Deformed Lumbar Spine Hands-On Cadaver Course. St. Louis University School of Medicine. St. Louis, Missouri, October 2-4-2014

Spine Grand Rounds. Washington University. St. Louis, Missouri, October 3, 2014

Anterior Column Realignment. 4th Annual UCSF Techniques in Complex Spine Surgery Course. Las Vegas, Nevada, November 7-8, 2014

Debate: Open v MIS Interbody Techniques. 4th Annual UCSF Techniques in Complex Spine Surgery Course. Las Vegas, Nevada, November 7-8, 2014

Unsolved Problems in Early Onset Scoliosis. 8th International Congress on Early Onset Scoliosis. Warsaw, Poland. November 20, 2014

Disruptive Thoughts in Global Alignment. Chicago, IL. December 12-13, 2014

Keynote Speaker. 5th Annual XLIF User Meeting for Australia and New Zealand. Melbourne, Australia March 22, 2015

Adult Lumbar Disc Herniation: Treatment, Complications, Outcomes and Evidence-Based Data for Patient and Health Professional Counseling. American Academy of Orthopaedic Surgeons 2015 Annual Meeting, Las Vegas, Nevada, March 24-28, 2015

Spine Deformity Panel. American Academy of Orthopaedic Surgeons 2015 Annual Meeting, Las Vegas, Nevada, March 24-28, 2015

Invited Lecturer - 15th Annual Brazilian Spine Society. Belo Horizonte, Brazil, April 18-20, 2015

Cervicothoracic Deformity. 12th Annual Symposium, State of Spine Surgery: A Think Tank. Los Cabos, Mexico, June 18-20, 2015

Use of a Preoperative Specific Customized Rod in Spinal Deformity. 12th Annual Symposium, State of Spine Surgery: A Think Tank. Los Cabos, Mexico, June 18-20, 2015

MIS What I've Learned. 12th Annual Symposium, State of Spine Surgery: A Think Tank. Los Cabos, Mexico, June 18-20, 2015

Bone Scalpel in The Treatment of Spinal Deformity. 12th Annual Symposium, State of Spine Surgery: A Think Tank. Los Cabos, Mexico, June 18-20, 2015

MIS Deformity Correction (Adult and Pediatric) – Case Presenter. 22nd Annual International Meeting On Advanced Spine Techniques. Kuala Lumpur, Malaysia, July 8-11, 2015

Are There Any Limits to Deformity Correction Through MIS Techniques? 22nd Annual International Meeting On Advanced Spine Techniques. Kuala Lumpur, Malaysia, July 8-11, 2015

MIS for Lumbar Spine - 2015 San Diego Spine Foundation Visiting Professorship Annual Meeting, July 24, 2015



**Donald Blaskiewicz, MD**

Tumors of the Spine: Evidence Update - 2015 San Diego Spine Foundation Visiting Professorship Annual Meeting



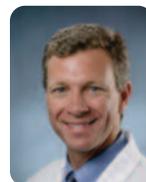
**Maneesh Bawa, MD**

Thoracolumbar Burst Fracture Treated by MIS Vs. Open Surgery - 2015 San Diego Spine Foundation Visiting Professorship Annual Meeting



**Ramin Bagheri, MD**

Thoracolumbar Burst Fracture Treated by MIS Vs. Open Surgery - 2015 San Diego Spine Foundation Visiting Professorship Annual Meeting



**James D. Bruffey, MD**

Navigating the Physician Hospital Relationship - 2015 San Diego Spine Foundation Visiting Professorship Annual Meeting



**Matthew Goldstein, MD**

Independent Challenges in New Practice – East Coast Experience - 2015 San Diego Spine Foundation Visiting Professorship Annual Meeting



**Edward Nomoto, MD**

Independent Challenges in New Practice – West Coast Experience - 2015 San Diego Spine Foundation Visiting Professorship Annual Meeting

## Invited Lectures Sites 2014-2015



### 2014-2015 Table of Meeting Icons and Bibliography Acronyms



48<sup>th</sup> Annual Meeting of the Scoliosis Research Society, Anchorage, Alaska, Sept 10-13, 2014



American Academy of Pediatrics National Conference and Exhibition. San Diego, California, October 11-14, 2014



2014 Ed Quigley Clinical Research Symposium, San Diego, California, November 5, 2014



Annual Meeting of the North American Spine Society, San Francisco, California, November 12-15, 2014



8<sup>th</sup> International Congress on Early Onset Scoliosis and Growing Spine (ICEOS), Warsaw, Poland, November 20-21, 2014



American Academy of Orthopaedic Surgeons 2015 Annual Meeting, Las Vegas, Nevada, March 24-28, 2015



International Society for The Advancement of Spine Surgery. San Diego, California, April 15-17, 2015



34<sup>th</sup> Annual Meeting of European Pediatric Orthopaedic Society. Marseille, France. April 15-18, 2015



8<sup>th</sup> Annual SOLAS Research Meeting. San Diego, California, April 18, 2015



British Scoliosis Society. Sheffield, South Yorkshire, United Kingdom, April 22-23, 2015



Annual Meeting of the Pediatric Orthopaedic Society of North America. Atlanta, Georgia, April 29 – May 2, 2015



12<sup>th</sup> Annual Symposium, State of Spine Surgery: A Think Tank. Los Cabos, Mexico, June 18-20, 2015



22<sup>nd</sup> Annual International Meeting On Advanced Spine Techniques. Kuala Lumpur, Malaysia, July 8-11, 2015



SCORE Orthopedic Fellows Research Forum, Scripps Green Hospital, San Diego, California, July 16, 2015



2015 San Diego Spine Foundation Visiting Professorship Annual Meeting, San Diego, California, July 24, 2015