



San Diego  
Spine Foundation

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2014 Annual Report  
Academic Year  
August 2013 – July 2014

**fostering excellence in spinal education and research**

# Research



**Jeff Pawelek, BS**  
Research Director



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



**Navid R. Arandi, BS**  
Research Fellow



**Pooria Hosseini, MD, M.Sc.**  
Research Fellow



**Bo Robertson**  
Research Assistant

## Publications and Presentations for the 2013-2014 Academic Year

### Peer-Reviewed Publications: Adult

Scheer JK, Tang JA, Smith JS, Klineberg EO, Hart RA, **Mundis, GM**, Burton DC, Hostin R, O'Brien MF, Bess RS, Kebaish KM, Deviren V, Lafage V, Schwab FJ, Shaffrey CI, Ames CP; ISSG: *Reoperation Rates And Impact On Outcome In A Large, Prospective, Multicenter, Adult Spinal Deformity Database*. J Neurosurg Spine. 2013 Aug 23

Ames, CP, Smith, JS, Scheer, JK, Shaffrey, CI, Lafage, V, Deviren, V, Moal, B, Protopsaltis, T, Mummaneni, PV, **Mundis, GM**, Hostin, R, Klineberg, E, Burton, DC, Hart, R, Bess, S, Schwab, FJ, ISSG: *A Standardized Nomenclature For Cervical Spine Soft-Tissue Release And Osteotomy For Deformity Correction*. J Neurosurg: Spine 19 (3): 269-278, September 2013

Smith, JS, Klineberg, E, Schwab, F, Shaffrey, CI, Moal, B, Ames, CP, Hostin, R, Fu, Kai-Ming G, Burton, D, **Akbarnia, BA**, Gupta, M, Hart, R, Bess, S, Lafage, V, ISSG: *Change In Classification Grade By The SRS-Schwab Adult Spinal Deformity Classification Predicts Impact On Health-Related Quality Of Life Measures*. Spine Volume 38, Number 19, PP 1663 – 1671, September 2013

Bess, S, Line, BG, Lafage, V, Schwab, F, Shaffrey, C, Hart, RA, Boachie-Adjei, O, **Akbarnia, BA**, Ames, C, Burton, DC, Deverin, V, Fu, KG, Gupta, M, Hostin, R, Kebaish, K, Klineberg, E, **Mundis, GM**, O'Brien, M, Shelokov, A, Smith, J, ISSG: *Does Recombinant Human Bone Morphogenetic Protein-2 Use In Adult Spinal Deformity Increase Complications And Are Complications Associated With Location Of Rhbmp-2 Use? A Prospective, Multicenter Study Of 279 Consecutive Patients*. Spine: Volume 39 - Issue 3 - PP 233-242, February 2014

**Akbarnia, BA, Mundis, GM, Moazzaz, P, Kabirian, N, Bagheri, R, Eastlack, RK, Pawelek, JB**: *Anterior Column Realignment (ACR) For Focal Kyphotic Spinal Deformity Using A Lateral Transpoas Approach And All Release*. J Spinal Disord Tech; 27(1): 29-39, February 2014

Mummaneni, PV, Shaffrey, CI, Lenke, LG, Park, P, Wang, MY, La Marca, F, Smith, JS, **Mundis, GM**, Okonkwo, DO, Moal, B, Fessler, RG, Anand, N, Uribe, JS, Kanter, AD, **Akbarnia, BA**, Fu, KG: *The Minimally Invasive Spinal Deformity Surgery Algorithm: A Reproducible Rational Framework For Decision Making In Minimally Invasive Spinal Deformity Surgery*. Neurosurgical Focus 36 (5): E6, 2014

Slobodyanyuk, K, Poorman, CE, Smith, JS, Protopsaltis, TS, Hostin, R, Bess, S, **Mundis, GM**, Schwab, FJ, Lafage, V, ISSG: *Clinical Improvement Through Nonoperative Treatment of Adult Spinal Deformity: Who Is Likely To Benefit?* Neurosurgical Focus 36 (5): E2, 2014

Haque, RM, **Mundis, GM**, Ahmed, Y, El Ahmadi, TY, Wang, MY, Mummaneni, PV, Uribe, JS, Okonkwo, DO, **Eastlack, RK**, Anand, N, Kanter, AS, La Marca, F, **Akbarnia, BA**, Park, P, Lafage, V, Terran, JS, Shaffrey, CI, Klineberg, E, Deviren, V, Fessler, RG: *Comparison Of Radiographic Results After Minimally Invasive, Hybrid, And Open Surgery For Adult Spinal Deformity: A Multicenter Study Of 184 Patients*. Neurosurgical Focus 36 (5): E13, 2014

Wang, MY, Mummaneni, PV, Fu, KG, Anand, N, Okonkwo, DO, Kanter, AS, La Marca, F, Fessler, R, Uribe, J, Shaffrey, CI, Lafage, V, Haque RM, Deviren, V, **Mundis, GM**, ISSG: *Less Invasive Surgery For Treating Adult Spinal Deformities: Ceiling Effects For Deformity Correction With 3 Different Techniques*. Neurosurgical Focus 36 (5): E12, 2014

Uribe, JS, Deukmedjian AR, Mummaneni, PV, Fu, KG, **Mundis, GM**, Okonkwo, DO, Kanter, AS, **Eastlack, R**, Wang, MY, Anand, N, Fessler, RG, La Marca, F, Park, P, Lafage, V, Deviren, V, Bess, S, Shaffrey, CI, ISSG: *Complication In Adult Spinal Deformity Surgery: An Analysis Of Minimally Invasive, Hybrid, And Open Surgical Techniques*. Neurosurgical Focus 36 (5): E15, 2014

Bianco K, Norton, R, Schwab, F, Smith, JS, Klineberg, E, Obeid, I, **Mundis, GM**, Shaffrey, CI, Kebaish, K, Hostin, R, Hart, R, Gupta, MC, Burton, D, Ames, C, Boachie-Adjei, O, Protopsaltis, TS, Lafage, V, ISSG: *Complications and Intercenter Variability Of Three-Column Osteotomies For Spinal Deformity Surgery: A Retrospective Review Of 423 Patients*. Neurosurgical Focus 36 (5): E18, 2014

Scheer JK, Lafage V, Smith, JS, Deviren, V, Hostin, R, McCathy, IM, **Mundis, GM**, Burton, DC, Klineberg, E, Gupta, MC, Kebaish, KM, Shaffrey, CI, Bess, S, Schwab, F, Ames, CP, ISSG: *Impact Of Age On The Likelihood Of Reaching A Minimum Clinically Important Difference In 374 Three-Column Spinal Osteotomies*. J Neurosurg: Spine 20 (3): 306-312, March 2014

Kim, HJ, Boachie-Adjei, O, Shaffrey, CI, Schwab, F, Lafage, V, Bess, S, Gupta, MC, Smith, JS, Deviren, V, **Akbarnia, BA, Mundis, GM**, O'Brien, M, Hostin, R, Ames, C: *Upper Thoracic Versus Lower Thoracic Upper Instrumented Vertebrae Endpoints Have Similar Outcomes And Complications In Adult Scoliosis*. Spine, 39(13): E795-E799, June 01, 2014

**Schroerlucke, S, Steklov, N, Mundis, GM, Marino, JF, Akbarnia, BA, Eastlack, RK**: *How Does A Novel Monoaxial Pedicle Screw Perform Biomechanically Relative To Monoaxial And Polyaxial Designs? Clinical Orthopaedics And Related Research*. Pubmed: Clinical Orthopaedics And Related Research, June 2014

## Peer-Reviewed Publications: Pediatric

Vitale, MG, Riedel, MD, Glotzbecker, MP, Matsumoto, H, Roye, DP, **Akbarnia, BA**, Anderson, RCE, Brockmeyer, D, Emans, J, Erickson, MA, Flynn, JM, Lenke, LG, Lewis, S, Luhmann, SJ, McLeod, L, Newton, PO, Nyquist, A, Richards, BS, Shah, SA, Skaggs, DL., Smith, JT, Sponseller, PD, Sucato, D, Zeller, R, Saiman, L: *Building Consensus: Development Of A Best Practice Guideline (BPG) For Surgical Site Infection (SSI) In High-Risk Pediatric Spine Surgery.* Journal Of Pediatric Orthopedics 33(5) 471-478, July/August 2013

Flynn, JM, Tomlinson, LA, **Pawelek, J**, Thompson, GH, McCarthy, RE, **Akbarnia, BA**: *Growing Rod Graduates: Lessons From Ninety-Nine Patients Who Have Completed Their Lengthenings.* J Bone Joint Surg Am. 2013; 95:1745-50; October 2013

Farnsworth, CL, Newton, PO, Breisch, E, **Rohmiller, MT**, Kim, JR, **Akbarnia, BA**: *The Biological Effects Of Combining Metals In A Posterior Spinal Implant: In Vivo Model Development Report Of The First Two Cases.* Advances In Orthopedic Surgery, Vol. 2014 (2014), Article Id 761967, 9 Pages

Glotzbecker, MP, Garg, S, **Akbarnia, BA**, Vitale, M, St. Hilaire, T, Joshi, A: *Surgeon Practices Regarding Infection Prevention For Growth Friendly Spinal Procedures.* Journal Of Children's Orthopaedics. Vol 8: PP 245-250 April 1, 2014

Myung, KS, Skaggs, DL, Thompson, GH, Emans, JB, **Akbarnia, BA**, GSSG: *Nutritional Improvement Following Growing Rod Surgery In Children With Early Onset Scoliosis.* J Childr Orthop: Volume 8, Issue 3 (2014), PP 251-256.

Skaggs, DL, **Akbarnia, BA**, Flynn, JM, Myung, KS, Sponseller, PD, Vitale, MG: *A Classification Of Growth Friendly Spine Implants.* J Pediatr Orthp. 34 (3) PP 260-274, April/ May 2014

Glotzbecker, MP, Gold, M, Miller, P, **Akbarnia, BA**, Johnston, C, Perez-Grueso, FS, Shah, SA, Emans, JB: *Distraction-Based Treatment Maintains Predicted Thoracic Dimensions In Early Onset Scoliosis.* Spine Deformity, 2(3): 203-207; May 2014

## Non-Refereed Publications

**Akbarnia, BA, Pawelek, JB, Arandi, NR**: *Magnetically Controlled Growing Rods (MCGR) For The Treatment Of Progressive Early-Onset Scoliosis (EOS).* Case Study Library, Spine Universe. November 14, 2013



2013-14 Research Fellow Navid Arandi presents at 2013 ICEOS in San Diego

## Book Chapters

**Kabirian, N, Akbarnia, BA**: *Early Onset Scoliosis.* In Spinal Deformities: The Essentials. Heary R.F. and Albert T.J. Editors. Thieme 2014

**Mundis, GM, Kabirian, N, Akbarnia, BA**: *Anterior Column Realignment (ACR): Minimally Invasive Surgery For The Treatment Of Adult Sagittal Plane Deformity.* Minimally Invasive Spine Surgery, Phillips, F, Et al., Editors. Springer 2014

## Poster Exhibits - Adult

Bess, RS, Fu, KG, Lafage, V, Schwab, FJ, Shaffrey, CI, Ames, CP, Hart, RA, Gupta, MC, Klineberg, EO, Deviren, V, **Akbarnia, BA, Mundis, GM**, Hostin, RA, O'Brien, M, Burton, DC, Kebaish, KM, Boachie-Adjei, O, Smith JS, ISSG: *Disease State Correlates For Pain And Disability In Adult Spinal Deformity (ASD); Assessment Guidelines For Health Care Providers*



Bess, RS, Line, B, **Akbarnia, BA**, Ames, CP, Boachie-Adjei, O, Burton, DC, Deviren, V, Fu, KG, Gupta, MC, Hart, RA, Hostin, RA, Kebaish, KM, Klineberg, EO, Lafage, V, **Mundis, GM**, O'Brien, M., Schwab, FJ, Shaffrey, CI, Smith JS, ISSG: *Return To Surgery Does Not Worsen Health Related Quality Of Life (HRQOL) Or Patient Satisfaction At 2 Years: An Analysis Of Incidence And Risk Factors For Secondary Surgery In Adult Spinal Deformity (ASD)*



**Mundis, GM**, Lafage, V, Terran, JS, **Akbarnia, BA, Eastlack, RK**, Wang, MY, Uribe, JS, Anand, N, Park, P, Haque, RM, Okonkwo, DO, Kanter, AS, Lamarca, F, Fessler, RG, Ames, CP, Klineberg, EO, Shaffrey, CI, Deviren, V, ISSG: *A Prospective Propensity Matched Cohort Analysis Of Minimally Invasive (MIS), Hybrid (HYB), And Open Spine Surgery (Open) For The Treatment Of Adult Spinal Deformity (ASD)*



**Eastlack RK**, Scheer J, Kim HJ, Boachie-Adjei O, Deviren V, Smith J, Hart R, Bess S, **Mundis GM**, Lafage V, Schwab F, Shaffrey C, Burton D, Ames C, ISSG: *Do Operative Outcomes for Adults with Spinal Deformity Differ Based on the Relative Severity of Back and Leg Pain Prior to Surgery?*



Anand, N, **Mundis, GM**, Mummaneni, P, Okonkwo D, Adam K, Lamarca F, Park P, Fessler R, Smith J, Fu K, Wang M, Uribe J, Terran J, **Akbarnia BA**, Deviren V, ISSG: *Comparison Of Complication Rate Between Hybrid (HYB) And Circumferential MIS (CMIS) Techniques In The Correction Of Adult Spinal Deformity (ASD)*



**Eastlack RK, Mundis GM**, Wang M, Mummaneni P, Uribe J, Okonkwo D, **Akbarnia BA**, Anand N, Kanter A, Park P, Lafage V, Shaffrey C, Fessler R, Deviren V, ISSG: *Is There A Patient Profile That Characterizes A Patient As A Candidate For Minimally Invasive Surgery (MIS) To Treat Adult Spinal Deformity (ASD)*



Okonkwo D, Kanter A, **Mundis GM**, Uribe J, Wang M, Mummaneni P, Anand N, Fessler R, Park P, Fu K, Lafage V, Terran J, **Akbarnia BA**, Deviren V, ISSG: *Stand Alone Lateral Interbody Fusion (SALIF) vs. Circumferential MIS (CMIS) For Adult Spinal Deformity (ASD)*





Robert Eastlack, MD presenting paper

Protopsaltis T, Bronsard N, Terran J, Smith J, **Mundis GM**, Kim H, Hostin R, Hart R, Ames C, Lafage V: *Cervical Sagittal Deformity Develops After PJK In Adult Thoracolumbar Deformity Correction*



Terran J, Schwab FJ, **Mundis, GM**, Klineberg, E, Buchowski, JM, Hart, RA, Hostin, R, Gupta MC, Ames, CP, Smith, JS, Shaffrey CI, Lafage V, Bess S, Burton DC, ISSG: *Poor Psychosocial Profile Reported By SF 36, SRS 22r and DRAM Does Not Predict Outcome Following Adult Spinal Deformity Surgery*



Klineberg E, Fu KM, Terran J, Smith JS, Lafage V, Schwab FJ, Bess S, Hart RA, Kebaish K, Buston DC, Shaffrey CI, Ames C, Hostin R, **Mundis GM**, Gupta MC, ISSG: *Impact Of Major And Minor Complications On Health Related Quality Of Life Following Adult Spinal Deformity Surgery: Multicenter Prospective Database*



Klineberg E, Buchowski J, Fu Km, Smith JS, Terran J, Boachie-Adjei, Lafage V, Schwab FJ, Bess S, Burton DC, Shaffrey CI, Ames CP, Hostin R, **Mundis GM**, Gupta MC, ISSG: *Variance In Complication Rate Reporting Among High Volume Spinal Deformity Centers – Analysis Of A Multicenter Prospective Database*



Fessler, RG, Mummaneni, PV, Anand, N, **Blaskiewicz, DJ**, Uribe, JS, Wang, MY, Kanter, AS, Okonkwo, DO, Park, P, Deviren, V, **Nguyen, S**, Shaffrey, CI, **Akbarnia, BA**, **Mundis, GM**, ISSG: *Does Minimally Invasive Pedicle Screw Placement Prevent Reoperation For Distal Junctional Failure When Fusion Is To L5? A Two-Year Follow Up Study*



**Eastlack, RK**, **Mundis, GM**, **Nguyen, S**, **Blaskiewicz, DJ**, Pimenta, L, Uribe, JS, Marco, R, **Akbarnia, BA**: *Radiographic Outcomes Following Anterior Column Realignment (ACR) With And Without Posterior Osteotomies*



Kanter, AS, **Mundis, GM**, Mummaneni, PV, Anand, N, Fessler, RG, Passias, PG, Park, P, Lafage, V, La Marca, F, Uribe, JS, Wang, MY, **Akbarnia, BA**, Shaffrey, CI, Okonkwo, DO, ISSG: *Re-Operation Rates In Minimally Invasive, Hybrid And Open Surgical Treatment For Adult Spinal Deformity With Minimum Two-Year Follow Up*



**Mundis, GM**, **Akbarnia, BA**, **Eastlack, RK**, **Nguyen, S**, **Blaskiewicz, DJ**, Pimenta, L, Marco, R, **Bagheri, R**, Deviren, V, Uribe, JS: *Defining Peri-Operative Complications Following Anterior Column Realignment (ACR) For Adult Sagittal Plane Deformity: A Multicenter Analysis*



Liu, S, Liabuad, B, Smith, JS, Hostin, R, Shaffrey, CI, Cunningham, ME, **Mundis, GM**, Ames, CP, Burton, DC, Bess, S, **Akbarnia, BA**, Hart, RA, Schwab, FJ, Lafage, V, ISSG: *Reaching Minimal Clinically Important Difference Through Non-Operative Treatment Of Adult Spinal Deformity*



Liabaud B, Lafage V, Schwab F, Smith J, Hamilton D, Hiratzka J, Deviren V, Ames C, Kim H, Bess S, **Mundis GM**, Klineberg E, Hu S, Hart R, ISSG: *How Much Lordosis Is Required For Sagittal Alignment In Patients With High Or Low Pelvic Incidence?*



Kelly M, Bess S, **Mundis GM**, Klineberg E, Zabala L, Shaffrey C, Smith J, Kim H, Kebaish K, Lafage V, Schwab F, Burton D, Cunningham M, Soroceanu A, ISSG: *Allogenic Blood Transfusions In Adult Spinal Deformity Surgery: Trends And Complications From 428 Patients*



Bianco K, Maier S, Smith J, Hostin R, Shaffrey C, Cunningham M, **Mundis GM**, Ames C, Burton D, Bess S, Gupta M, Protopsaltis T, Schwab F, Lafage V, ISSG: *Inter-Center Variability In Treatment And Surgical Outcomes Of Sagittal Adult Spinal Deformity (ASD) Surgery: A Retrospective Analysis From Five Surgical Centers*



Fu K, Park P, **Mundis GM**, Anand N, La Marca F, Uribe J, Wang M, Kanter A, Okonkwo D, Fessler R, Deviren V, **Nguyen S**, Shaffrey C, Mummaneni P, 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*



Park P, Mummaneni P, **Mundis GM**, Anand N, Nunley P, Uribe J, Wang M, Kanter A, Okonkwo D, Fessler R, Deviren V, **Nguyen S**, Shaffrey C, Fu K, ISSG: *Does The Use Of Minimally Invasive Pedicle Screw Fixation Lower The Rate Of PJK?*



## Poster Exhibits - Pediatric

Glotzbecker, M, Emans, JB, Gold, M, **Akbarnia, BA**, Johnston, CE, Shah, SA, Pérez-Gruoso, FJS, GSSG: *Distraction Based Treatment Maintains Predicted Thoracic Dimensions In Early Onset Scoliosis*



Schwend, R, Kishan, S, Blakemore, L, Ferguson, JA, Reigrut, JL, Schmidt, JA, **Akbarnia, BA**, CSSG: *New Data On The Growth Patterns Of The Pediatric Spinal Canal*



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



Carl, AL, Aydinli, U, Rehak, L, Grevitt, M, Zabka, M, Repko, M, Akesen, B, Nnadi, C, Crandall, D, Klemme, WR, **Akbarnia, BA**: *Posterior Short-Segment Apical Correction And Fusion Can Preserve Motion In Patients With Adolescent Idiopathic Scoliosis*



## Podium Presentations – Adult

Bianco K, Schwab F, Smith J, Klineberg E, Obeid I, **Mundis GM**, Kebaish K, Hostin R, Hart R, Burton D, Ames C, Boachie-Adjei O, Protosaltis T, Lafage V, ISSG: *Complications And Inter-Center Variability Of Three Column Osteotomies For Spinal Deformity Surgery: A Retrospective Review Of 423 Patients*



Protosaltis T, Schwab F, Brossard N, Smith J, Klineberg E, **Mundis GM**, Hostin, Hart A, Burton D, Ames C, Shaffrey C, Bess S, Errico T, Lafage V, ISSG: *The T1 Pelvic Angle (TPA), A Novel Radiographic Measure Of Global Sagittal Deformity, Accounts For Both Pelvic Retroversion And Truncal Inclination And Correlates Strongly With HRQOL*



Klineberg E, Buchowski J, Fu K, Smith J, Boachie-Adjei, Lafage V, Schwab F, Bess S, Burton D, Shaffrey C, Ames C, Hostin R, **Mundis GM**, Gupta, M, ISSG: *Variance In Complication Rate Reporting Among High Volume Spinal Deformity Centers: Analysis Of A Multi-Center Prospective Database*



Kim H, Boachie-Adjei O, Scheer J, Hostin R, Kebaish K, Smith J, **Mundis GM**, Schwab F, Lafage V, Hart R, Bess S, Deviren V, Shaffrey C, Ames C, ISSG: *Upper Thoracic Versus Lower Thoracic Upper Instrumented Vertebrae Endpoints Have Similar Outcomes And Complications In Adult Scoliosis At Two-Year Follow-Up*



Bess S, Line B, Shaffrey C, Klineberg E, Lafage V, Schwab F, Ames C, Boachie-Adjei O, Burton D, Gupta M, Hart R, **Mundis GM**, Hostin R, Smith J, ISSG: *Recombinant Human Bone Morphogenetic Protein-2 (RhBMP-2) Use In Adult Spinal Deformity (ASD) Does Not Increase Major, Infectious Or Neurological Complications And May Decrease Return To Surgery At One Year: A Prospective, Multi-Center Analysis*



Bess S, Line B, Shaffrey C, Klineberg E, Lafage V, Schwab F, Ames C, Boachie-Adjei O, Burton D, Kebaish K, Hart R, **Mundis GM**, Hostin R, Smith J, ISSG: *Two-Year Prospective, Multi-Center Analysis Of Consecutive Adult Spinal Deformity (ASD) Patients Demonstrates Higher Fusion Grade, Lower Implant Failures And Greater Improvement In SRS-22r Scores For Patients Treated With Recombinant Human Bone Morphogenetic Protein-2 (BMP)*



Devos P, Terran J, Hostin R, Hart R, Ames C, Boachie-Adjei O, Smith J, Klineberg E, Obeid I, **Mundis GM**, Kebaish K, Protosaltis T, Schwab F, Lafage V, ISSG: *Three Column Spinal Osteotomies For Adult Spinal Deformity: Inter-Center Analysis Of Variability In Technique And Alignment Impact*



Gupta M, Terran J, **Mundis GM**, Smith J, Shaffrey C, Kim H, Boachie-Adjei O, Lafage V, Bess S, Hostin R, Burton D, Ames C, Kebaish K, Klineberg E, ISSG: *Pedicle Subtraction Osteotomy (PSO) In The*

*Revision Versus Primary Adult Spinal Deformity (ASD) Patient: Is There A Difference In Correction And Complications?*



Maier S, Lafage V, Smith J, Obeid I, **Mundis GM**, Klineberg E, Kebaish K, Hostin R, Hart R, Burton D, Boachie-Adjei O, Ames C, Protosaltis T, Schwab F, ISSG: *Revision Surgery After Three Column Osteotomy (3CO) In 335 Adult Spinal Deformity (ASD) Patients: Inter-Center Variability And Risk Factors*



Protosaltis T, Scheer J, Terran J, Smith J, Kim H, **Mundis GM**, Hart R, McCarthy I, Klineberg E, Lafage V, Bess S, Schwab F, Shaffrey C, Ames C, ISSG: *How The Neck Affects The Back: Changes In Regional Cervical Sagittal Alignment Correlate To HRQL Improvement In Adult Thoracolumbar Deformity Patients At Two-Year Follow-Up*



Protosaltis T, Terran J, Brossard N, Smith J, Klineberg E, **Mundis GM**, Han K, Hostin R, Hart R, Shaffrey C, Bess S, Ames C, Schwab F, Lafage V, ISSG: *T1 Slope Minus Cervical Lordosis (T1S-CL), The Cervical Analog Of PI-LL, Defines Cervical Sagittal Deformity In Patients Undergoing Thoracolumbar Osteotomy*



Bess, RS, Line, B, Lafage, V, Schwab, FJ, **Akbarnia, BA**, Ames, CP, Boachie-Adjei, O, Burton, DC, Deviren, V, Buchowski, JM, Hart, RA, Kebaish, KM, Klineberg, EO, Gupta, MC, Errico, TJ, **Mundis, GM**, Hostin, RA, Smith JS, ISSG: *Complications Are Different For Recombinant Human Bone Morphogenetic Protein-2 (BMP) Versus No Bmp Use In Adult Spinal Deformity (ASD): An Analysis Of Variance In Complication Timing, Profile And Consequences*



Kim HJ, Boachie-Adjei O, Scheer J, Hostin R, Kebaish K, Smith J, **Mundis GM**, **Eastlack RK**, Schwab B, Lafage V, Hart R, Bess S, Deviren V, Shaffrey CI, Ames C, ISSG: *Upper Thoracic versus Lower Thoracic Upper Instrumented Vertebrae Endpoints have Similar Outcomes and Complications in Adult Scoliosis at 2-Year Follow up*



**Mundis GM**, Lafage V, **Akbarnia BA**, **Eastlack RK**, Wang M, Uribe J, Anand N, Mummaneni P, Okonkwo D, Kanter A, Lamarca F, Park P, Fessler R, Shaffrey C, Schwab F, Bess S, Deviren V, ISSG: *A Prospective Propensity Matched Cohort Analysis Of Minimally Invasive (MIS), Hybrid (HYB), And Open Spine Surgery (Open) For The Treatment Of Adult Spinal Deformity (ASD)*



Dr. Akbarnia speaks at the 2014 AAOS Kids Forum regarding Pediatric Orthopedic Advancements titled: Lessons Learned - The MAGEC Experience

**Mundis, GM, Akbarnia, BA, Kabirian, N, Pawelek, J, Eastlack, RK, Shaffrey, C, Klineberg, E, Bess, S, Ames, C, Deviren, V, Lafage, V, ISSG: Anterior Column Realignment (ACR) Has Similar Results To Pedicle Subtraction Osteotomy (PSO) In Treating Adults With Sagittal Spinal Deformity: A Multicenter Study**



Bess, RS, Line, BG, Klineberg, EO, Lafage, V, Schwab, FJ, Ames, C, Hart, RA, Shaffrey, CI, **Akbarnia, BA**, ISSG: *Adult Spinal Deformity Patients Treated With RhBMP-2 Have Higher Fusion Grades and Report Better Outcomes at 2 Years*



**Mundis, GM, Akbarnia, BA, Kabirian, N, Pawelek, J, Eastlack, RK, Shaffrey, CI, Klineberg, EO, Lafage, V, ISSG: Anterior Column Realignment (ACR) Has Similar Results To PSO In Adult Spinal Deformity**



Bess, RS, Line, BG, Shaffrey, CI, Klineberg, EO, Lafage, V, Schwab, FJ, Hart, RA, Boachie-Adjei, O, **Akbarnia, BA**, Ames, CP, Buchowski, J, Burton, DC, Devirin, V, Errico, T, Fu, KC, Gupta, M, Hostin, R, Kebaish, K, **Mundis, GM**, O'Brien, M, Shelokov, A (Deceased), Smith, JS: ISSG: *RhBMP-2 Use In Adult Spinal Deformity Does Not Increase Major Infectious Or Neurological Complications At One Year*



Hamilton D, Hiratzka J, Shaffrey C, Bess S, Ames C, **Mundis GM**, Lafage V, Hart R, ISSG: *Satisfaction After Adult Spinal Deformity Surgery Is Not Driven By HRQOL Scores Or Curve Correction*



**Mundis, GM, Akbarnia, BA, Mummaneni, P, Kanter, A, Okonkwo, D, Park, P, Uribe, J, Deviren, V, Anand, N, Wang, M, La Marca, F, Fessler, R, Nguyen, S, Eastlack, RK, ISSG: Adult Spinal Deformity Treated With Minimally Invasive Techniques: 2-Year Multicenter Clinical And Radiographic Outcomes Study Comparing Circumferential MIS And Hybrid Surgery**



Bolinger, B, Kanter, AS, **Mundis, GM**, Mummaneni, P, Anand, N, Fessler, R, Passias, P, Park, P, La Marca, F, Uribe JS, Wang, MY, Liaboud, B, Diablo, B, **Akbarnia, BA**, Shaffrey, CI, Okonkwo, DO, ISSG: *Re-Operation Rates In Minimally Invasive, Hybrid And Open Surgical Treatment For Adult Spinal Deformity With Minimum 2 Year Follow-Up*



Bolinger B, Fu Km, Park P, **Mundis GM**, Anand N, La Marca F, Uribe JS, Wang My, Kanter As, Okonkwo D, Fessler R, Deviren V, **Nguyen S**, Shaffrey CI, Liaboud B, Diebo D, Mummaneni P, ISSG: *Do MIS Deformity Interventions Result In Similar Reductions Of Disability Compared With Traditional Open Correction At 1 And 2 Years? A Propensity Matched Cohort Analysis*



Uribe, JS, Harris, JE, Turner, AW, **Mundis, GM**, Deukmedjian, A, **Akbarnia, BA**: *Finite Element Analysis Of Anterior Column Reconstruction And Lateral Hyperlordotic Cage Placement*



**Eastlack, RK, Mundis, GM, Bagheri, R, Nguyen, S, Blaskiewicz, DJ, Pimenta, L, Deviren, V, Uribe, J, Marco, R, Akbarnia, BA, SOLAS ACR Study Group: Radiographic Outcomes Following Anterior Column Realignment (ACR) With And Without Posterior Osteotomies**



Uribe, JS, **Mundis, GM, Eastlack, RK, Akbarnia, BA**, Marco, R, **Bagheri, R, Blaskiewicz, DJ**, Deviren, V, **Nguyen, S**, Pimenta, L, SOLAS ACR Study Group: *Minimally Invasive Anterior Column Realignment For The Treatment Of Adult Sagittal Plane Deformity: A Multicenter Study*



**Bagheri, A, Mundis, GM, Nguyen, S, Bagheri, R, Eastlack, RK, Brown, D, Arandi, NR, Akbarnia, BA: Characterizing Complications Of Anterior Column Realignment (ACR) For Adult Sagittal Deformity.**



**Brown, D, Mundis, GM, Arandi, NR, Bagheri, A, Nguyen, S, Eastlack, RK, Bagheri, R, Akbarnia, BA: Anterior Column Realignment (ACR): Minimum Two-Year Follow Up Of Clinical And Radiographic Outcomes**



Gupta M, Boachie-Adjei O, Cunningham M, Protosaltis T, Deviren V, **Mundis GM**, Ames C, Hostin R, Lafage V, Klineberg E, Smith J, Terran J, ISSG: *Coronal Imbalance May Be Neglected In Patients Undergoing Majority Sagittal Deformity Correction*



Maier SP, Lafage V, Smith JS, Obeid I, **Mundis GM**, Klineberg E, Kebaish K, Hostin R, Hart R, Burton D, Boachie-Adjei O, Gupta M, Ames C, Protosaltis T, Schwab F, ISSG: *Revision Surgery After Three-Column Osteotomy In 335 Adult Spinal Deformity Patients: Inter-Center Variability And Risk Factors*



Dr. Mundis presents at the 2014 VP Annual Meeting on Spine Deformity Patient Care and Research in 2014

Devos P, Maier SP, Terran J, Hostin R, Hart R, Ames C, Boachie-Adjei O, Smith J, Klineberg E, Obeid I, **Mundis GM**, Kebaish K, Protosaltis T, Schwab F, Lafage V, ISSG: *Three Column Spinal Osteotomies For Adult Spinal Deformity: Inter-Center Analysis Of Variability In Technique And Alignment Impact.*



Ryan D, Protosaltis T, Ames C, Hostin R, Klineberg E, **Mundis GM**, Obeid I, Kebaish K, Smith J, Boachie-Adjei O, Burton D, Hart R, Schwab F, Lafage V, ISSG: *Does T1 Pelvic Angle (TPA) Effectively Assess Sagittal Imbalance And Can It Predict Sustainable Correction?*



Poorman, C, Slobodyanyuk, K, Smith J, Protopsaltis T, Hostin R, Bess S, **Mundis GM**, Schwab F, Lafage V, ISSG: *Clinical Improvement Through Nonoperative Treatment Of Adult Spinal Deformity: Who Is Likely To Benefit?*



Protopsaltis T, Lafage R, Smith J, Klineberg E, Gupta M, Kim HJ, **Mundis GM**, Schwab F, Errico T, Ames C, Lafage V, ISSG: *Upper Cervical Compensation For Maintenance Of The Horizontal Gaze In 150 Thoracolumbar Deformity Patients With And Without Cervical Sagittal Deformity: Analysis of Craniocervical Relationships Including CBVA And A Novel Parameter, The Slope Of Line Sight (SLS)*



Protopsaltis T, Brossard N, Terran J, Smith J, Klineberg E, **Mundis GM**, Kim H, Hostin R, Hart R, Ames C, Shaffrey C, Bess S, Schwab F, Lafage V, ISSG: *Cervical Sagittal Deformity Develops After PJK In Adult Thoracolumbar Deformity Correction: Radiographic Analysis Utilizing A Novel Global Sagittal Parameter, The CTPA*



Protopsaltis, TS, Maler, SP, Smith, JS, Hostin, R, Shaffrey, CI, Boachie-Adjei, O, **Mundis, GM**, Ames, CP, Errico, TJ, Bess, RS, Klineberg, EO, Hart, RA, Schwab, FJ, Lafage, V, ISSG: *Should our Elderly Spinal Deformity Patients Have the Same Targets for Correction and Is There an Optimal Alignment Target that Results in Less PJK?*



Bess, S, Line, B, Lafage, V, Ames, CP, Boachie-Adjei, O, Burton, DC, Hart, RA, **Akbarnia, BA**, Klineberg, EO, **Mundis, GM**, Hostin, R, Schwab, FJ, Shaffrey, CI, Smith, JS, ISSG: *Peak Timing And Associated Risk Factors For Specific Complications Following Adult Spinal Deformity (ASD) Are Identifiable: A Guide For Surgeons And Patients*



Passias, PG, Yang, S, Soroceanu, A, Smith, JS, Shaffrey, CI, Boachie-Adjei, O, **Mundis, GM**, Ames, CP, Burton, DC, Bess, RS, Klineberg, EO, Hart, RA, Schwab, FJ, Lafage, V, ISSG: *Predictors of Revision Surgery in Adult Spinal Deformity and Impact on Patient-Reported Outcomes and Satisfaction Two-Year Follow-up*



Challier, V, Liu, S, Ames, CP, Kebaish, K, Obeid, I, Hostin, R, Klineberg, E, Boachie-Adjei, O, Smith, JS, **Akbarnia, BA**, Bianco, K, Protopsaltis, TS, Schwab, FJ, Lafage, V, ISSG: *Three-Column Osteotomies In Elderly Patients: Is It Worth It?*



Past Visiting Surgeon Ricardo Acacio dos Santos, MD returns to San Diego from Brazil to attend 2013 ICEOS Meeting.

Soroceanu, A, Burton, DC, Smith, JS, Hostin, R, Shaffrey, CI, Boachie-Adjei, O, **Akbarnia, BA**, Ames, CP, Errico, TJ, Bess, S, Gupta, MC, Deviren, V, Schwab, FJ, Lafage, V, ISSG: *Predictors Of Infections And Medical Complications In The Setting Of Adult Spinal Deformity Surgery*



Liu, S, Ferrero, E, Ames, CP, Kebaish, K, Obeid, I, Hostin, R, Klineberg, EO, Boachie-Adjei, O, Smith, JS, **Mundis, GM**, Maier, SP, Protopsaltis, TS, Schwab, FJ, Lafage, V, ISSG: *Revisions and Junctions Failures of Short vs. Long Fusions for Adult Spinal Deformity Treated by Three-Column Osteotomy*



Liabaud, B, Ferrero, E, Ames, CP, Kebaish, K, **Mundis, GM**, Hostin, R, Gupta, MC, Boachie-Adjei, O, Smith, JS, Hart, RA, Diebo, BG, Protopsaltis, TS, Schwab, FJ, Lafage, V, ISSG: *Sagittal Alignment following Lumbar Three-Column Osteotomy: Does the Level of Resection Matter?*



Protopsaltis, TS, Boniello, AJ, Smith, JS, Passias, PG, Shaffrey, CI, Boachie-Adjei, O, **Mundis, GM**, Ames, CP, Errico, TJ, Bess, RS, Gupta, MC, Hart, RA, Schwab, FJ, Lafage, V, ISSG: *Are Established Targets for Spinal Deformity Correction Valid? Pre- to Post-Operative Analysis Using the T1 Pelvic Angle (TPA), A Novel Radiographic Parameter of Sagittal Deformity*



Ames, CP, Scheer, JK, **Mundis, GM**, Klineberg, EO, Hart, RA, Kelly, MP, Deviren, V, Burton, DC, McCarthy, I, Bess, RS, Schwab, FJ, Shaffrey, CI, Lafage, V, Smith, JS, ISSG: *The Effect of Complications and Reoperation on Recovery Kinetics in 149 Adult Spinal Deformity Patients with Two-Year Follow up: An Area Under the Curve Analysis*



Passias, PG, Smith, JS, Soroceanu, A, Boniello, AJ, Scheer, JK, Schwab, FJ, Shaffrey, CI, Kim, HJ, Protopsaltis, TS, **Mundis, GM**, Gupta, MC, Klineberg, EO, Lafage, V, Ames, CP, ISSG: *Post-operative Cervical Deformity in 215 Thoracolumbar Adult Spinal Deformity Patients: Prevalence, Risk Factors and Impact on Patient-Reported Outcome and Satisfaction at Two-Year Follow up*



Lafage, R, Lafage, V, Smith, JS, Hostin, R, Shaffrey, CI, Kim, HJ, **Mundis, GM**, Ames, CP, Errico, TJ, Bess, RS, Gupta, MC, Hart, RA, Schwab, FJ, Protopsaltis, TS, ISSG: *Upper Cervical Compensation and Maintenance of Horizontal Gaze in 150 Thoracolumbar Deformity Patients With and Without Deformity*



Bess, S, Line, B, Lafage, V, Ames, CP, Boachie-Adjei, O, Burton, DC, Hart, RA, **Akbarnia, BA**, Klineberg, EO, **Mundis, GM**, Hostin, R, Schwab, FJ, Shaffrey, CI, Smith, JS, ISSG: *Prospective Analysis Of Location Of RhBMP-2 Use In Adult Spinal Deformity (ASD) Surgery Does Not Correlate With Site Specific Complications And Generates Greater Rates At Minimum Two-Year Follow Up*



Uribe, J, Harris, JE, Turner, A, **Mundis, GM, Akbarnia, BA**: *Finite Element Analysis Of Lordosis Restoration With Anterior Longitudinal Ligament Release And Lateral Hyperlordotic Cage Placement*



Smith, JS, **Eastlack, RK, Blaskiewicz, DJ**, Shaffrey, CI, Schwab, FJ, Bess, RS, Kim, JH, Klineberg, EO, O'Brien, MF, Albert, TJ, Fehlings, MG, Lafage, V, Ames, CP, Riew, KD, ISSG: *Reliability Assessment of a*

## Novel Cervical Deformity Classification System



Schwab, FJ, Diebo, BG, Smith, JS, Hostin, R, Shaffrey, CI, Cunningham, ME, **Mundis, GM**, Ames, CP, Burton, DC, Bess, RS, Gupta, MC, Hart, RA, Protopsaltis, TS, Lafage, V, ISSG: *Fine-Tuned Surgical Planning in Adult Spinal Deformity: Determining the Lumbar Lordosis Necessary by Accounting for Both Thoracic Kyphosis and Pelvic Incidence*



Klineberg, EO, Gupta, MC, **Nguyen, S**, Ames, CP, Burton, DC, Hart, RA, Protopsaltis, TS, **Akbarnia, BA**, Shaffrey, CI, Smith, JS, Schwab, FJ, Deviren, V, Kim, HJ, Bess, S, ISSG: *Posterior Surgical Correction With Or Without Interbody In Matched Curves Provides Similar Correction In Adult Spinal Deformity*



Soroceanu, A, Burton, DC, Smith, JS, Hostin, R, Shaffrey, CI, Boachie-Adjei, O, **Mundis, GM**, Deviren, V, Errico, TJ, Bess, RS, Gupta, MC, Hart, RA, Schwab, FJ, Lafage, V, ISSG: *Impact of Obesity on Complications and Patient-Reported Outcomes in Adult Spinal Deformity Surgery*



Kim, HJ, Protopsaltis, TS, **Nguyen, S**, Cunningham, ME, Passias, PG, Smith, JS, Shaffrey, CI, Schwab, FJ, **Mundis, GM**, Klineberg, EO, Gupta, MC, Hart, RA, Burton, DC, Bess, RS, Ames, CP, ISSG: *High Post-Operative C2-7 SVA is Associated with Proximal Junctional Kyphosis*



Soroceanu, A, Errico, TJ, Smith, JS, Hostin, R, Shaffrey, CI, Boachie-Adjei, O, **Mundis, GM**, Ames, CP, Burton, DC, Bess, RS, Gupta, MC, Deviren, V, Schwab, FJ, Lafage, V, ISSG: *The Effect of Antifibrinolytic Therapy on Complications, Blood Product Utilization and Fusion in Adult Spinal Deformity*



Protopsaltis, TS, Bianco, K, Smith, JS, Passias, PG, Shaffrey, CI, Kim, Han Jo, **Mundis, GM**, Ames, CP, Burton, DC, Bess, RS, Klineberg, EO, Hart, RA, Schwab, FJ, Lafage, V, ISSG: *The Lumbar Pelvic Angle (LPA), the Lumbar Component of the Fan of Spinopelvic Alignment, Correlates with HRQOL and PI-LL Mismatch and Predicts Global Alignment*



Klineberg, EO, Gupta, MC, **Nguyen, S**, Ames, CP, Burton, DC, Kelly, MP, **Mundis, GM**, Shaffrey, CI, Smith, JS, Schwab, FJ, Errico, TJ, Hostin, R, Kim, HJ, Bess, RS, ISSG: *Anterior Posterior vs. Posterior-Only Correction In Adult Spinal Deformity Matched Curves: Similar Correction with More Intra-Operative, but Fewer Late Implant Complications*



Hamilton, DK, Hiratzka, JR, Hiratzka, S, Ames, CP, Smith, JS, Shaffrey, CI, **Akbarnia, BA**, Boachie-Adjei, O, Bess, S, Scheer, JK, Lafage, V, Schwab, FJ, Hart, RA, ISSG: *Adverse Events Have Limited Impact On Clinical Outcome Following Surgery For Adult Spinal Deformity*



Hamilton, DK, Hiratzka, JR, Hiratzka, S, Ames, CP, Smith, JS, Shaffrey, CI, **Akbarnia, BA**, Boachie-Adjei, O, Bess, S, Scheer, JK, Lafage, V, Schwab, FJ, Hart, RA, ISSG: *Perioperative Complications Do Not Affect Patient Satisfaction Following Adult Spinal Deformity Surgery*



## Podium Presentations - Pediatric

Vitale, MG, Park, HY, Matsumoto, H, McCalla, DJ, Roye, DP, Skaggs, DL, **Akbarnia, BA**: *Correction And Complications In The Treatment Of EOS: Is There A Difference Between Spine Versus Rib-Based Proximal Anchors?*



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



Park, H, Matsumoto, H, McCalla, DJ, Roye, JR, DP, Roye, BD, Hyman, JE, Skaggs, DL, **Akbarnia, BA**, *Correction And Complications In The Treatment Of EOS: Is There A Difference Between Spine Vs. Rib-Based Proximal Anchors?*



Dr.'s Robert K. Eastlack and Gregory M. Mundis, Jr at 2014 SRS Annual Meeting in Anchorage, Alaska

England, K, Ledonio, Polly, D, **Akbarnia, BA**, Hoggard, E: *Pediatric Thoracic Volume Modeling For Early Onset Scoliosis: A Validation Study*



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



Glotzbecker, M, Emans, JB, Gold, M, Miller, P, **Akbarnia, BA**, Johnston, C, Shah, S, Perez-Grueso, FS, GSSG: *Distraction Based Treatment Maintains Predicted Thoracic Dimensions In Early Onset Scoliosis*



**Pawelek, J**, Yaszay, B, **Nguyen, S**, Newton, P.O., **Mundis, GM**, **Akbarnia, BA**, Harms Study Group; GSSG: *Case-Matched Comparison Of Spinal Fusion Versus Growing Rods For The Surgical Treatment Of Progressive Idiopathic Scoliosis In Skeletally Immature Patients*



Matsumoto, H, Park, H, Trupia, E, Roye, D, **Akbarnia, BA**, Campbell, R, Flynn, JM, Garg, S, Sanders, J, Smith, J, Yaszay, B, Vitale, M: *Criterion Validity Test-Retest Reliability And Internal Consistency Reliability Of The Early-Onset Scoliosis 24 Item Questionnaire (EOSQ-24)*



**Akbarnia, BA**, Ferguson, J, **Mundis, GM**, Yaszay, B, Nnadi, C: *Four-Year Highlights Of Magnetically Adjustable Growing Rods*





**Akbarnia, BA, Kabirian, N, Pawelek, J,** Thompson, GH, Emans, JB, Sponseller, PD, Skaggs, DL, GSSG: *Five To Sixteen-Year Results Of 201 Growing Rod Patients: Is There A Difference Between Etiologies?*



**Barba, D, Mundis, GM,** Yazsay, B, **Pawelek, J, Nguyen, S, Kabirian, N,** Shah, S, Emans, JB, Johnston, CE, **Akbarnia, BA,** GSSG: *Radiographic Analysis of Cervicothoracic And Spinopelvic Changes After Dual Growing Rod Surgery For Early Onset Scoliosis*



**Arandi, NR; Pawelek, J, Kabirian, N,** Thompson, GH, Emans, JB, Flynn, JM, Dormans, JP, **Akbarnia, BA,** GSSG: *Do Thoracolumbar/Lumbar Curves Respond Differently To Growing Rod Surgery Compared To Thoracic Curves?*



Glotzbecker, MP, Garg, S, **Akbarnia, BA,** Vitale, MG, St Hilaire, T, Joshi, A: *Surgeon Practices Regarding Infection Prevention For Growth Friendly Spinal Procedures*



Yamaguchi, K, Skaggs, DL, Myung, KS, Yazici, M, Johnston, CE, Thompson, GH, Sponseller, PD, **Akbarnia, BA,** Vitale, MG: *Proximal Rib Anchors Have 77% Less Risk Of Rod Breakage Than Proximal Spine Anchors In Growing Rods*



Yaszay, B, **Kabirian, N, Mundis, GM, Pawelek, J,** Bartley, C, **Akbarnia, BA:** *EOS Imaging System Is Available For Early Onset Scoliosis And Can Reduce Ionizing Radiation Exposure*



Vitale, MG, Pace, GI, Wright, M, Matusmoto, H, **Akbarnia, BA,** Dormans, JP, Emans, JB, Erickson, MA, Flynn, JM, Glassman, SD, Glotzbecker, MP, Ibrahim, KN, Lewis, SJ, Luhmann, SJ, McCarthy, J, Newton, PO, Polly, DW, Richards, BS, Sanders, JO, Shah, SA, Skaggs, DL, Smith, JT, Sponseller, PD, Sucato, DJ, Zeller, R, Roye, DP, Lenke, LG: *Creation Of A Consensus-Based Checklist For The Response To Intra-Operative Neuromonitoring Changes In Pediatric Spine Surgery.*



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



**Akbarnia, BA,** Cheung, KMC, Demirkiran, GH, Elsebaie, HB, Emans, JB, Johnston, CE, **Mundis, GM,** Noordeen, HH, **Pawelek, J,** Shaw, M, Skaggs, DL, Sponseller, PD, Thompson, GH, Yazici, M, GSSG: *Traditional Growing Rods Vs. 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 Growing Rods?*



Jain, A, Sponseller, PD, Modhia, U, Shah, SA, Thompson, GH, **Pawelek, J, Akbarnia, BA,** GSSG: *Can A "Final Fusion" Procedure Be Avoided In Early Onset Scoliosis Patients Who Reach Skeletal Maturity After Growing-Rod Treatment?*



## Invited Speaker

### **Akbarnia, BA:**

Spine Deformity Solutions: A Hands-On Course From The Scoliosis Research Society. Burr Ridge, IL. October 3-5, 2013

Visiting Professor Shafa Hospital, Iran University Of Medical Sciences: Tehran, Iran, October 9, 2013

21<sup>st</sup> Annual Meeting Of The Iranian Orthopedic Association, Tehran, Iran. October 14-18-2013

3rd Annual UCSF Techniques In Complex Spine Surgery Course, Las Vegas, Nevada, Nov. 1-2, 2013

7<sup>th</sup> International Congress On Early Onset Scoliosis And Growing Spine (ICEOS), San Diego, California, Nov. 21-22, 2013

Vumedi CME Webinar, January 6, 2014

National Association Of Orthopedic Nurses San Diego Chapter Meeting, San Diego, California, Feb. 18, 2014

AAOS Kids Forum - American Academy Of Orthopaedic Surgeons Annual Meeting, New Orleans, Louisiana, March 11-15, 2014

Visiting Professor – University Of Oregon. Portland, Oregon. May 12, 2014

2014 Annual San Diego Spine Visiting Professors Meeting, San Diego, California, July 25, 2014

### **Mundis, GM:**

Spine Deformity Solutions: A Hands-On Course From The Scoliosis Research Society. Burr Ridge, IL. October 3-5, 2013

Society for Minimally Invasive Spine Surgery SMISS, Las Vegas, Nevada Nov. 1-3, 2013

Instructional Course Lecture - American Academy Of Orthopaedic Surgeons Annual Meeting, New Orleans, Louisiana, March 11-15, 2014

Spine Technology And Educational Group Organization 11<sup>th</sup> Annual Symposium, Los Cabos, Mexico. June 26-28, 2014

International Meeting On Advanced Spine Techniques: Valencia, Spain, July 16-19, 2014

2014 Annual San Diego Spine Visiting Professors Meeting, San Diego, California, July 25, 2014

### **Eastlack, RK:**

2014 Annual San Diego Spine Visiting Professors Meeting, San Diego, California, July 25, 2014

### **Bagheri, R:**

2014 Annual San Diego Spine Visiting Professors Meeting, San Diego, California, July 25, 2014

### **Bruffey, JD:**

2014 Annual San Diego Spine Visiting Professors Meeting, San Diego, California, July 25, 2014

### **Blaskiewicz, DJ:**

Kenya Outreach Trip, February 2014

2014 Annual San Diego Spine Visiting Professors Meeting, San Diego, California, July 25, 2014

### **Bawa, M:**

2014 Annual San Diego Spine Visiting Professors Meeting, San Diego, California, July 25, 2014

### **Kostial, P:**

National Association Of Orthopedic Nurses San Diego Chapter Meeting, San Diego, California, Feb. 18, 2014

## 2013-2014 Table of Meeting Icons and Acronyms

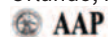
48th Annual Meeting Scoliosis Research Society  
Lyon, France, Sept 18-21, 2013



North American Spine Society Annual Meeting  
New Orleans, Louisiana, October 9-12, 2013



American Academy Of Pediatrics National Conference & Exhibition  
Orlando, Florida, October 26-29, 2013



Society For Minimally Invasive Spine Surgery  
Las Vegas, Nevada, Nov.1-3, 2013



7th International Congress Of Early Onset  
Scoliosis And Growing Spine (ICEOS)  
San Diego, California, Nov. 21-22, 2013



American Academy Of Orthopaedic Surgeons Annual Meeting  
New Orleans, Louisiana, March 11-15, 2014



7th Annual SOLAS Research Meeting, San Diego, CA.  
Miami, Florida, April 28-29, 2014



2014 International Society For The Advancement Of Spine Surgery  
Miami Beach, Florida April 30 – May 2, 2014



Pediatric Orthopaedic Society Of North America Annual Meeting  
Hollywood, California, April 30 – May 3, 2014



Minnesota Orthopaedic Society Meeting  
Minneapolis, Minnesota, May 16, 2014



21st International Meeting On Advanced Spine Techniques  
Valencia, Spain, July 16-19, 2014



2014 Annual San Diego Spine Visiting Professors Meeting,  
San Diego, California, July 25, 2014



**Save The Date**

**2015 San Diego Spine Visiting Professor  
Annual Meeting  
with David W. Polly, MD  
Friday, July 24, 2015**



*Dr. Akbarnia with 2015 SDSF Visiting Professor  
David W. Polly, MD (SRS President-Elect)*

***“The future of spinal research and  
care is bright. The San Diego Spine  
Foundation will be at the forefront  
of the change.”***



*Faculty and 2014-15 fellows work on research projects*



*We would like to congratulate Sarah Canale, MD for her recent marriage. Sarah is a past SDSF research coordinator who has gone on to complete her medical degree and residency in Pediatrics in Boston, MA. We are so very proud of Sarah and all our past fellows and coordinators. We wish them all a bright future.*