



San Diego Spine Foundation

E s t a b l i s h e d i n 2 0 0 6

15 Year Anniversary



2021 Annual Report

Academic Year

August 2020 – July 2021

OUR MISSION

To Serve the Spine Community through Achievement of
Professional Excellence and Optimization of Clinical Care

Note From The President and Founder



2021 President's Note

As President of SDSF, I am pleased to write this year-end update, which celebrates our 15-year anniversary as a nonprofit organization. As such, this report will feature, events and staff members who have been a part of our family over the years. I hope you'll enjoy this trip down memory lane with us!

As many of you know, we bid a fond farewell to Pat Kostial last year as our first Executive Director, knowing that her shoes would be easily filled by Tressa Goulding, our longtime friend and former SRS Executive director. Pat remains on the SDSF Board of Directors and continues to provide guidance with the transition and beyond. In the meantime, Tressa hit the ground running. With her unique knowledge and skills, both as Executive Director and Meeting Manager, she is working to upgrade our educational meetings, including our 2022 meeting next July, which will be combined with our next joint fundraiser gala. We can't thank Tressa enough for stepping in and stepping up as our new Executive Director!

And thanks to all who organized and participated, we met last July at the Hilton La Jolla Torrey Pines Hotel for the first San Diego Spine Visiting Professorship since the beginning of COVID. Many thanks to our Visiting Professors, Muharrem Yazici from Ankara, Turkey, President of the Scoliosis Research Society, as well as our 2021 faculty and Greg Mundis, the Program Chair, for putting together an exceptional program.

Our fellowship program continues to thrive. The 2020-2021 academic cycle continued to be challenged by COVID so many of our meetings remained virtual, but slowly we are transitioning back to both in person and virtual meeting options. Mai Lee worked with faculty member Hani Malone to initiate the West Coast Spine Conference, inviting spine fellows, residents and faculty at west coast academic centers to both lecture and attend these unique Ortho/Neuro-based spine conferences. My hat is off to all who have worked so hard to develop and implement these meetings!

Mai has been a tremendous asset as our Fellowship Administrator, helping to take our fellowship administrative processes to the next level. We are very happy to announce another record-breaking year for fellowship applications at 103! We have worked very hard to listen to our fellows each year, and with their input, evolve the program to make it academically, technically and personally challenging in the most positive way. Please see our Fellowship page to get the latest information on our graduating, incoming and future fellows.

SDSF, having become more and more academically involved both internally and through our joint efforts with UCSD, hired another full-time academic staff member, Kiersten Farmer (see Kiersten's bio on page 6) She has stepped up and helped Mai with Fellowship operations, as well as helping Bahar Shahidi with the administrative side of our research efforts. Welcome to the SDSF family Kiersten!

And we just received an update from Dr. Susan Bukata, UCSD's new Chair of the Department of Orthopaedic Surgery, that a search committee has been assembled and a search for the first Spine Chair, funded by the Endowment to which so many of you contributed, will become a reality in 2022. We are extremely excited by this news, and SDSF looks forward to working with the new Endowed Spine Chair to advance the programs already underway by UCSD, SDSF and other participating San Diego institutions.

In all, 2021 has been an extremely positive year and we are very optimistic about 2022, as COVID begins to move more and more into our rearview mirror. May we take all the lessons learned from this pandemic to become more flexible, resilient, empowered and successful. We certainly have a wonderful team assembled to accomplish great things! On behalf of the entire SDSF Board of Directors, we wish you and your families a wonderful 2022!

Warmest Regards

A handwritten signature in black ink that reads "Behrooz". The signature is stylized and cursive.

Behrooz Akbarnia, MD

San Diego Spine Foundation Board of Directors and Faculty



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1. Behrooz A. Akbarnia, MD, *President and Founder, Board of Directors, Director Emeritus San Diego Spine Fellowship Program*

2. Sarah E. Aghassi, Esq. *Secretary, Board of Directors*

3. Robert K. Eastlack, MD, *CFO, Board of Directors Faculty Member, Spine Fellowship Program*

4. Patricia N. Kostial, RN, BSN, *Board of Directors*

5. Gregory M. Mundis, Jr., MD, *Vice President, Board of Directors Director and Faculty Member, Spine Fellowship Program*

6. Peter O. Newton, MD, *Board of Directors*

7. Jeff Pawelek, BS, *Board of Directors*

8. Sam Ward, PT, Ph.D., *Board of Directors*



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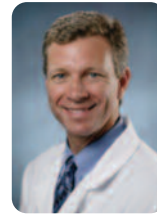
Additional Members of the Fellowship Faculty



Ramin Bagheri, MD
*Scripps Clinic,
La Jolla, CA*



Maneesh Bawa, MD
*San Diego Orthopaedic Associates
Medical Group,
San Diego, CA.*



James D. Bruffey, MD
*Scripps Clinic,
La Jolla, CA.*



Ali Bagheri, MD
*Girard Orthopedics
San Diego, CA*



Hani Malone, MD
*Scripps Clinic,
La Jolla, CA.*



Bahar Shahidi, PT, Ph.D.
*UCSD,
La Jolla, CA.*

How can you support the San Diego Spine Foundation?

SDSF has established an Endowment Fund for those who wish to contribute to support the foundation's research, education and outreach efforts for years to come. SDSF also accepts donations for current use to cover operating expenses.

For credit/Debit card donations: <https://www.sandiegospinefoundation.org/donate/>

Checks can be mailed and payable to:

San Diego Spine Foundation
6190 Cornerstone Ct.; Ste. 212
San Diego, CA 92121

For Credit Card or Check: Please indicate either ENDOWMENT or ANNUAL OPERATIONS in the memo.

San Diego Combined Spine Fellowship Program Fellowship Director's Message 2020-2021



Our 2020-21 Fellowship year was another success despite COVID-19 challenges, with 2 physicians completing their clinical spine training: Robert Ames and Daniel Reid. Since graduation, Robert has accepted a position with Reconstructive Orthopedics in Marlton, New Jersey, while Daniel has accepted a position with Conway Medical Center in Conway, South Carolina. We'd like to congratulate both of them for their hard work and wish them great success in their future careers.

On August 1, 2021, our new clinical fellows hit the ground running – quickly acclimating to the COVID-19-adjusted clinical and academic settings: Micah Blais from Harvard Combined Orthopedics Residency Program and Kody Barrett from Harbor-UCLA Medical Center Orthopedic Surgery Residency Program.

Looking to the future, we will be welcoming Cameron Shirazi from University of Oklahoma Health Sciences Center and Amber Price from University of New Mexico Health Sciences Center. We are pleased to have matched both Drs. Shirazi and Price who were among our top ranked candidates.

We are thrilled to receive a total of 103 applications to our program for two fellowship positions for the academic year 2023-24. We definitely have our work cut out for us as we work to identify the top candidates and strategize on

the interviews that will occur in late February 2022. Already armed with constructive input from our past and current fellows, we hope to continue to build a program that is the best in the country. Thank you to all who have contributed to making our fellowship training program one of the very best!

We are also pleased to provide additional training to 2 other surgeons during the 21-22 academic year. Shalin Shah, DO completed his residency at University of Pittsburgh Medical Center Pinnacle Health and a year of spine surgery training at the University of Rochester in Rochester, New York. Dr. Benjamin Kakfa, MD completed his residency at University of Texas Southwestern Medical Center in Dallas, Texas where he is also completing his spine surgery training. Drs. Shah and Kakfa will be spending 3 additional months of spine training at SDSF in advanced MIS and deformity training.



2014: Past, present and future fellows attend 2014 Annual Visiting Professor's Event (from left: Dr.'s Payam Moazzaz, Jay D. Turner, Michael Hennessy, G. Mark Sylvain, Ali Bagheri, Drew Brown, IV, Behrooz A. Akbarnia, Gregory M. Mundis, Jr., Michael Goldstein, Ardalan Nourian, Edmund Choi and Ramin Bagheri)

Gregory M. Mundis, Jr., MD



Visiting fellows Gabriel Schmidt and Kiyoshi Miyazaki with Research Fellow Pooria Hosseini, Research Director Jeff Pawelek and SDSF president Behrooz Akbarnia



2016-17 SDSF Clinical Fellow Amrit Khalsa with past fellow Dr. Nomoto and Monterrey surgeon Dr. Enrique Mendez in Monterrey, Mexico, March 2017

Executive Director Report



As we continue to adjust to a new reality shaped by COVID, there seems to be a light at the end of the tunnel, albeit a blinking one as new surges and variants come and go. Here at SDSF we were happily able to return to a live format for the Visiting Professorship meeting and to live Board and Journal Club meetings as well as some live spine conferences.

Overall, it's been a busy year, with a successful Visiting Professorship meeting, adding a new staff person, taking steps to begin awarding grants from endowment fund earnings, and planning for an exciting new combined event in 2022.

We were pleased to welcome Muharrem Yazici and Eric Klineberg as the 2021 Visiting Professors. Dr. Yazici is a Professor of Orthopaedic Surgery at Hacettepe University in Ankara, Turkey, President of the Scoliosis Research Society in 2020-21.

Dr. Klineberg is Chief of Spine Service and Co-Director of the Spine Center at University of California Davis in Sacramento, California. They were supported by a stellar faculty presenting on a number of topics from early onset to adult deformity and sparking lively audience discussions.

We are grateful to the following companies who provided support through exhibits, grants or both: NuVasive, ATEC Spine, Accelus, Carlsmed, Centinel Spine, Cerapedics, DePuy Synthes, Medtronic, Neo Spine, Orthofix, SeaSpine, SI-BONE, Stryker and Zimmer Biomet.

The coming year promises to be one of the best yet in terms of SDSF educational efforts. Led by Greg Mundis and Robert Eastlack, we will transition the popular and longstanding San Diego Spine Visiting Professorship meeting into a two-day educational, networking and fundraising event.

Scheduled for July 28-30 at the Omni La Costa Resort in Carlsbad, CA, the event will kick off with Case Discussions and Happy Hour on Thursday evening, followed by scientific sessions on Friday morning, a golf tournament in the afternoon, then dinner with a guest lecture. Saturday will commence with cycling for those in the mood for physical exercise, or non-CME industry workshops for those looking for additional mental exercise. Everyone will gather for scientific sessions from 10:00 am until 3:00 pm and the weekend will end with the GSO-SDSF Fundraising Gala on Saturday night.

Dr. Mundis and Dr. Eastlack are preparing a tremendous program with case-based learning addressing challenging issues in pediatric and adult spine care. SRS President Christopher Shaffrey will be a Keynote Speaker, with a supporting cast of top ranked surgeons from the West Coast and beyond

This will be a don't miss event!

Equally exciting are developing plans to begin offering grants from the SDSF Endowment Fund. This has been a long-term goal as we have worked to build the Fund as a reliable and consistent source of funds for education, research and outreach. It has finally grown to a level that will allow us to make \$40,000 available in 2022 for grants. Thank you to all of the wonderful individuals and companies who have helped to make this happen!

Bahar Shahidi and her team of Robert Eastlack, Jeff Pawelek and Sam Ward have done a tremendous job of developing guidelines and a process. Plans are to accept grant applications for scientific research, education or training, or outreach, with an initial focus on medical personnel, including trainees, in the San Diego area. Dr. Shahidi provides more information in an article on page 6.

As noted elsewhere, the Fellowship program also continues to be strong. Last year saw a record 94 applicants, eclipsed this year by 103. Congratulations to Fellowship Director Greg Mundis and to all the faculty who have clearly created an appealing program.

With another successful year in the books, we are eagerly looking forward to future successes. We are so grateful to everyone who has supported SDSF over the years and hope that you will continue with us as we work to improve lives through education, research and outreach.

A handwritten signature in black ink, appearing to read "Greg Mundis". The signature is fluid and cursive, written on a white background.

New Administration Coordinator

Kiersten Anne Farmer, B.S.

Kiersten Anne Farmer was born and raised in Manila, Philippines. She received her Bachelors of Science (B.S.) in Community Development with Minor in Public Administration from University of the Philippines. She graduated top of her class, earning Cum Laude and is a member of The Honor Society of Phi Kappa Phi and Pi Gamma Mu International Honor Society for the Social Sciences.

She started her career in Development Work in 2010 by doing two (2) semesters of field-work immersions in Urban Poor Communities in the Philippines that were affected by Typhoon Ketsana. In the community, together with her team they led Participatory Action Research to help build community capacity and capability.

In July 2011, she pursued her career in Corporate Social Responsibility (CSR) and served as Community Relations Supervisor of Yokohama Tire Philippines, Inc in Clark, Philippines. She developed the company's CSR framework and implemented programs such as; Scholarship, School Feeding and Fundraising among many others. In February 2014, she then joined Jollibee Group Foundation and served as Program Officer for their National School-feeding Program in Manila, Philippines.

She had an intensive fieldwork experience on Program Development, Monitoring and Implementation and Public-Private Partnerships; providing technical consultancy to over 50 cities/municipalities. She led the building of 24 out of 40 School Feeding Kitchens across the country which provided efficiency in food production.

Following a move to San Diego, Kiersten joined SDSF in August as an Administrative Coordinator.

She is the primary staff liaison for research activities, assists with the Fellowship program and course planning, and provides general administrative support.



New SDSF Grant Opportunities

Bahar Shahidi, PT, PhD

We would like to thank everyone who has supported the SDSF Endowment Fund over the years, and are happy to announce that with these funds, we are introducing a new Research Funding Grants Program beginning with \$40,000 to award in 2022. The vision for this grants program is to support collaborative research focused on applying basic, translational, and clinical science to improve education, foundational knowledge, and quality of clinical care for individuals with spine conditions.

Our goal is to issue a call for applications in March 2022 and fund the first grants in September of 2022. Three topic options will be available: Scientific Research, Education/Training, and Outreach, with priority given to collaborative/multi-institutional proposals. Scientific Research projects may include industry, basic/translational or clinical sciences.

The Education/Training category will provide funding for continuing education such as spending time with a surgeon or scientist in another region to learn specific procedures or skills. The Outreach category focuses on providing resources for care in underserved areas, either as part of an organized effort or through other contacts. Applications will be open to individuals within San Diego, or alumni of San Diego and includes practicing clinicians, residents, fellows, medical students, and PhD researchers.

Our grants committee, consisting of Robert Eastlack, Jeff Pawelek, Sam Ward, and myself, is excited to introduce this new opportunity for clinicians, trainees, and scientists. More information will be available soon on the SDSF website, where we hope to have an online application process.



Remembering Nathan

SDSF's 2019 Annual Report featured a patient story about Nathan Garcia, a courageous young man who had suffered from a severe spine deformity secondary to cardiopulmonary issues discovered shortly after birth. Despite every obstacle he and his mother faced, he remained optimistic and joyful.

sandiegospinefoundation.org/patients/stories/nathans-story/

Nathan and his mum last travelled to San Diego to attend our Gala in February 2020 and to get the word out about children with rare disorders. Sadly, the world lost Nathan this past September and it will forever be a different place without his infectious, happy spirit.



His Story 2019

The San Diego Spine Foundation, in keeping with its mission of research, education and outreach, especially now as we celebrate our 15th anniversary, wishes to honour Nathan and his mother as well as to help her promote her life's dream of establishing a Centre for Children with rare disorders, not only in Australia, but by building a gene bank around the globe, with the intention of providing hope to children and families with rare disorders world-wide as well as a chance for a better life. We only wish Nathan could have been here to help his mum realize this dream, but somehow, we believe he will still know.

Follow the links to learn more about The Nathan Centre and Monique Garcia.



2020 Gala



The Nathan Center



3 months old and awaiting his second Open Heart Surgery



Dr. Akbarnia, Nathan's Mother Monique and Nathan attended the Northern Lights Gala in February of 2020.

“THANK YOU FOR FIXING ME!”



MICHAEL'S STORY

I am Michael and I simply would not have much of a life without Dr. Robert Eastlack. However, the story leading to how Dr. Eastlack made such a dramatic improvement in my life is not so simple.

Before I met Dr. Eastlack, I had a long history of spinal surgeries, 8 in all, starting in 1996. Several of them involved systemic staph infections in 2007 and 2011, both gripping my entire body, putting me in 20-day plus comas and very nearly killing me. Both episodes required long hospital stays, recoveries and rehabs, multiple surgeries to various limbs, and learning to sit up, stand and walk again. But I came through amazingly well, able to resume work, exercise and travel. It was a lot of effort, and also very hard on my wife (imagine having a 10-month-old baby and hearing doctors tell you every day that your husband might not survive and, if he does, he might not walk or think clearly again.)

Then in 2015, my previous lumbar fusion failed and things deteriorated drastically. We had just moved to Carlsbad, California so I consulted with local spine specialists, but decided it was best to use the surgeon in LA who had treated my spinal infections, including at least once when he had undoubtedly saved my life. Unfortunately, the outcome was very poor. The pain didn't subside and the exercise program stalled. Finally, 15 months post-op, the surgeon informed me the fusion grafts had not taken.

The next few years grew increasingly painful with movement ever more difficult. Eventually, I could only sleep in a chair and over time had to replace one expensive chair with another.

By 2018, searching intensely for a surgeon, a neurosurgeon at Scripps told me that I had scoliosis over 30 degrees. When he said chances of success for the operation he outlined were at best 50/50, I decided to keep looking.

It took months to get an evaluation with the chief of orthopedics at UCSD, but his recommendations did not convince my wife and I that he could actually help me. By April of 2019, I could walk no more than 6-8 steps. Sleep was elusive, pain ever present. And having consulted with numerous spinal surgeons, I did not have a viable plan to fix what ailed me.



Then, on May 2, 2019, I had a follow-up for a very successful knee surgery by Dr. Bugbee at Scripps. Before the appointment, I had an ankle to above waist x-ray. Dr. Bugbee confirmed my knee was doing well, then told me the x-ray also showed alarming spinal abnormalities. I explained that I had been searching to address the exact issues he had noted and I mentioned some of the doctors I had seen. Dr. Bugbee replied that Dr. Robert Eastlack, a Scripps surgeon, could remedy my problems. He continued that he had contacted Dr. Eastlack and made an appointment for me the very next day. (I would later write a heartfelt thank you letter to Dr. Bugbee.)

My appointment with Dr. Eastlack was remarkable. Rather than recite disclaimers and poor odds, like every other surgeon I had consulted over the prior 18 months, this doctor, with a radiant confidence, said “I can fix what is wrong with you.” He then explained in detail how in three separate surgeries he would correct the deformities in my spine. My wife and I left that room with hope for the first time in many months.

Before I ever met Dr. Eastlack, I had made an appointment with the surgeon who had performed my first lumbar fusion, and my respect for him led me to follow through with that appointment. So just days before the scheduled surgeries with Dr. Eastlack, I went to my previous spine surgeon with new sets of images and blood tests that he had ordered. When he came into the exam room, he immediately told me

“You have an infection in your lumbar spine. Your temperature is normal, and the infection is very localized. But with your history you must take your temperature every hour. Second, we can’t handle the complex issues you are presenting. There is someone in the Bay Area who might help you and another one is San Diego. Now get going.”

Another infection? Really? And I was being referred to a doctor I didn’t have confidence in. Really? But then I remembered Dr. Eastlack and his calm confidence. “I can fix what’s wrong with you.” I remembered believing him. I still had to drive home and tell my wife about the infection knowing how scared it would make her, as she had lived through my multiple staph infections. But she was a strong woman. And we had faced far worse situations together.



The next several days were anxiety provoking beyond description as I checked my temperature for signs the infection was worsening. But my temperature remained normal as we went through the pre-op checklist.

Then, finally on June 10, 2019, a 9-hour procedure was scheduled to remove the old implants in my lumbar spine, followed by the initial re-construction of that area. The surgery only took 4 hours, however, as Dr. Eastlack and his team efficiently accomplished their objectives. When he visited later, he told me that things went well and that all evidence of infection had been resolved. Amazingly, the very next day I was able to get up and walk the hallways. And the following day’s surgery, again, went much quicker than estimated, and in Dr. Eastlack’s words “very, very successfully.” I went home a couple of days later with 11 fused and instrumented vertebrae and no more scoliosis.

Recovery and rehab went as well as I ever could have hoped. Post-op incision pain was so much easier to deal with than the mind-numbing stuff I had been suffering from and it improved rapidly. Plus, I had exercises... both strengthening and stretching to work on. I knew from the earliest days that the

surgeries were successful and I had been given the gift of movement again. I was walking better than I had in many years, swimming, and riding an exercycle. But there was the third surgery looming, the cervical fusion that Dr. Eastlack considered vital.

So, on May 18, 2020, I had my third surgery by Dr. Eastlack and his team, this time to correct numerous severe cervical spine issues with instrumentation and seven additional fused vertebrae. I was up walking quickly, home in 2 days, and off all prescription pain meds in a week, as I had little discomfort. I was able to perform my daily activities so quickly that when I went to a post-op appointment, my wife made me promise to take a picture of the X-ray so that I would have proof I had actually had surgery! It was truly amazing how rapidly I healed from this surgery. Dr. Eastlack is remarkable. Just as he said: he fixed what was wrong with me.

Now, I lead the most normal life I have in many years. I can walk for hours, garden, swim and bicycle. I drove roundtrip to Colorado and Northern California this past summer and took wonderful hikes on both trips. These are things I wouldn’t have even considered before these surgeries. And I take no pain meds of any kind. Dr. Eastlack gave me back my life. It is not just that I had no quality of life: I was threatened with losing my life. Barely able to move and with a history of staph infections and comas and a third infection brewing in my spine, I was in a terribly precarious spot. Then Dr. Eastlack got to work.....



Thank You!
Thank You for fixing me.



<https://www.sandiegospinefoundation.org/patients/stories/michaels-story-2021ar/>

Michaels' Story 2021

Graduating Clinical Fellows 2020-2021



Robert J. Ames, MD
Reconstructive Orthopedics
Cherry Hill, NJ



Daniel Reid, MD, MPH
Conway Medical Center
Conway, SC

Current Clinical Fellows 2020-2021



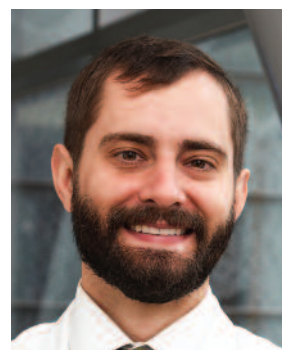
Kody K. Barrett, MD
Harbor UCLA Medical Center
Torrance, California



Micah B. Blais, MD
Harvard Combined Orthopedics
Residency Program
Boston, Massachusetts



Shalin Shah, DO
University of Rochester
Rochester, New York



Benjamin Kafka, MD
University of Texas
Southwestern Medical Center
Dallas, Texas

Research Fellow



Fernando Rios, MD
Hospital Christus Muguerza
Chihuahua, Mexico

Future Clinical Fellows 2022-2023



Amber Price, MD
University of New Mexico HSC
Albuquerque, NM



Cameron Shirazi
University of Oklahoma HSC
Oklahoma City, OK

Naval Medical Center San Diego Orthopedic 2020-2021 Residents

SDSF is proud of our continued collaboration with the Orthopedic Residency Training Program at NMCS. Beginning in July 2017, we have welcomed PGY-4 residents from the Naval Medical Center. Residents complete 10 week rotations with our full-time clinical faculty. Their training curriculum includes clinic and surgeries, weekly spine and research conferences, journal club meetings, and presenting one assigned lecture.



John Donoughe, MD



John Waggoner, MD



Kevin Taniguchi, MD



Sean Sheppard, MD



Todd Heig, MD

Fellowship Activities



Greg Mundis and Robert Ames enjoy a light moment.



SDSF Fellows practicing their craft; assisting in the OR.



Fernando Rios, Hani Malone and Robert Ames at SeaSpine Cadaver Lab.



Fellows Robert Ames and Daniel Reid.

SDSF has trained a total of 44 Clinical Fellows, 5 Research Fellows, numerous International Fellows, and 30 Navy Ortho Residents since inception, contributing to the advancement of spinal care.



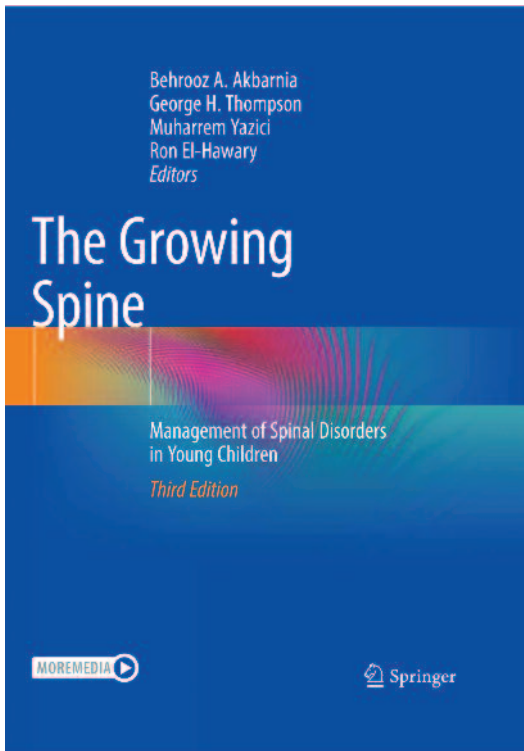
Congratulations Dr. Akbarnia

We are proud to report that Dr. Behrooz Akbarnia, Founder and current President of the San Diego Spine Foundation, recently received the Robert Campbell Jr. Award for Innovation in Early Onset Scoliosis.

The award was presented at the 2021 International Congress on Early Onset Scoliosis (ICEOS).

Dr. Akbarnia has been a major contributor to the care of children with scoliosis as an early innovator of Growing Rod technology. He established the first ICEOS meeting in 2007 and founded the Growing Spine Foundation now the Pediatric Spine Foundation after merging with Children's Spine Foundation, founded by the late Dr. Campbell. All of these efforts are dedicated to improving patient care through research and shared knowledge. He has also been heavily involved with Global Spine Outreach to provide care and training in second and third world areas.

The award is named in honor of Dr. Robert M. Campbell, Jr., a leading pediatric orthopedic surgeon widely known for his research, surgical innovations and dedication to the treatment of early onset scoliosis.



Congratulations also on the publication of the 3rd Edition textbook "THE GROWING SPINE: MANAGEMENT OF SPINAL DISORDERS IN YOUNG CHILDREN.

Dr. Akbarnia worked with Co-Editors George H. Thompson, Muharrem Yazici and Ron El-Hawary to produce this long anticipated update to the Growing Spine Textbook, which is considered one of the leading resources in the management of growing spine related disorders.

"Don't be afraid to take a chance. It takes someone who can start a marathon without a finish line. If it's for a child, it's worth it. Don't be afraid. You can succeed."

Robert M. Campbell, Jr., MD



*SRS/POSNA Pediatric Task Force with Dr. Bob Campbell
L. to R. Laurel Blakemore, Peter Newton, David Polly, Brian Snyder,
Robert Campbell, B. Stephens Richards, Michael Vitale and Behrooz Akbarnia*



Publications and Presentations 2020-2021

Peer-Reviewed Publications

Line B, Bess S, Lafage V, Ames C, Burton D, Kim HJ, Gupta M, Hart R, Klineberg E, Kelly M, Kebaish K, Hostin R, **Mundis G**, Schwab F, Shaffrey C, Smith JS, ISSG, *Counseling Guidelines for Anticipated Postsurgical Improvements in Pain, Function, Mental Health, and Self-Image for Different Types of Adult Spinal Deformity, Spine (Phila Pa 1976)*, 45(16):1118-1127, August 2020

Harris L, Andras LM, **Mundis GM**, Sponseller PD, Emans JB; Growing Spine Study Group, Skaggs DL. *Five or More Proximal Anchors and Including Upper End Vertebra Protects Against Reoperation in Distraction-Based Growing Rods. Spine Deform*;8(4):781-786, August 2020



Virk S, Passias P, Lafage R, Klineberg E, **Mundis G**, Protosaltis T, Shaffrey C, Bess S, Burton D, Hart R, Kim HJ, Ames C, Schwab F, Smith J, Lafage V; International Spine Study Group. *Intraoperative Alignment Goals for Distinctive Sagittal Morphotypes of Severe Cervical Deformity to Achieve Optimal Improvements in Health-Related Quality of Life Measures. Spine J*;20(8):1267-1275, September 2020

Saigal R, Akbarnia BA, Eastlack RK, Bagheri A, Tran S, Brown D, Bagheri R, Mundis GM: *Anterior Column Realignment: Analysis of Neurological Risk and Radiographic Outcomes. Neurosurgery.* 2020 Sep 1;87(3):E347-E354. Doi: 10.1093/Neuros/Nyaa064

32 Publications

53 Podium Presentations

18 Poster Exhibits

Klyce W, Mitchell SL, **Pawelek J**, Skaggs DL, Sanders JO, Shah SA, McCarthy RE, Luhman SI, Sturm PF, Flynn JM, Smith JT, **Akbarnia BA**, Sponseller PD, Pediatric Spine Study Group. *Characterizing Use of Growth-Friendly Implants for Early-Onset Scoliosis: A 10-Year Update. J Pediatr Orthop.* 2020 Sep;40(8): E740-E746



Clement RC, Yaszay B, **McClung A**, Bartley CE, Nabizadeh N, Skaggs DL, Thompson GH, Boachie-Adjei O, Sponseller PD, Shah SA, Sanders JO, **Pawelek J, Mundis GM, Akbarnia BA**, GSSG: *Growth-Preserving Instrumentation in Early-Onset Scoliosis Patients with Multi-Level Congenital Anomalies. Spine Deformity* 2020 Oct; 8(5): 1117-1130



Williams BA, **McClung A**, Blakemore LC, Shah SA, **Pawelek JB**, Sponseller PD, Parent S, Emans JB, Sturm PF, Yaszay B, **Akbarnia BA**, Pediatric Spine Study Group: *MRI Utilization and Rates of Abnormal Pretreatment MRI Findings in Early-Onset Scoliosis: Review of a Global Cohort. Spine Deformity.* 2020 Oct;8(5):1099-1107



Lafage R, Beyer G, Schwab F, Klineberg E, Burton D, Bess S, Kim HJ, Smith J, Ames C, Hostin R, Khalife M, Shaffrey C, **Mundis G**, Lafage V, *Risk Factor Analysis for Proximal Junctional Kyphosis After Adult Spinal Deformity Surgery: A New Simple Scoring System to Identify High-Risk Patients, Global Spine J*, 10(7):863-870, October 2020

Murphy RF, Barfield WR, Emans JB, **Akbarnia BA**, Thompson G, Sponseller P, Skaggs D, Marks D, Smith JT, Flynn J, Presson A, Sawyer JR, Johnston C; Pediatric Spine Study Group, *Minimum 5-Year Follow-Up on Graduates of Growing Spine Surgery for Early Onset Scoliosis. J Pediatr Orthop.* 2020 Nov/Dec;40(10): E942-E946



Padwal J, Berry DB, Hubbard JC, Zlomislis V, Allen RT, Garfin SR, Ward SR, **Shahidi B.** *Regional Differences Between the Superficial and Deep Lumbar Multifidus in Patients with Chronic Lumbar Spine Pathology. BMC Musculoskeletal Disorders.* 2020. Nov 20;21(1):764.

Shahidi B, Bursch R, Carmel J, Carranza A, Cooper KS, Lee JV, O'Conner C, Sorg SF, Schiehser D, Maluf KS. *Greater Severity and Functional Impact of Post-Traumatic Headache in Veterans with Comorbid Neck Pain Following Traumatic Brain Injury. Mil Med.* 2020. Dec 11:usaa532. doi: 10.1093/milmed/usaa532.

Buell TJ, Smith JS, Shaffrey CI, Kim HJ, Klineberg EO, Lafage V, Lafage R, Protosaltis TS, Passias PG, **Mundis GM, Eastlack RK**, Deviren V, Kelly MP, Daniels AH, Gum JL, Soroceanu A, Hamilton DK, Gupta MC, Burton DC, Hostin RA, Kebaish KM, Hart RA, Schwab FJ, Bess S, Ames CP, International Spine Study Group (ISSG). *Multicenter Assessment of Surgical Outcomes in Adult Spinal Deformity Patients with Severe Global Coronal Malalignment: Determination of Target Coronal Realignment Threshold. J Neurosurg Spine.* 2020 Dec 4:1-14

Matsumoto H, Fields MW, Roye BD, Roye DP, Skaggs D, **Akbarnia BA**, Vitale MG: *Complications in the Treatment of EOS: Is There a Difference Between Rib and Spine-Based Proximal Anchors?* Spine Deformity 2021 Jan; 9(1): 247-253



Matsumoto H, Skaggs DL, **Akbarnia BA**, **Pawelek JB**, Hilaire TS, Levine S, Sturm P, Perez-Gruoso FJS, Luhmann SI, Sponseller PD, Smith JT, White KK, Vitale MG; Pediatric Spine Study Group. *Comparing Health-Related Quality of Life and Burden of Care Between Early-Onset Scoliosis Patients Treated With Magnetically Controlled Growing Rods and Traditional Growing Rods: A Multicenter Study.* Spine Deformity 2021 Jan; 9(1): 239-245



Hida T, **Eastlack RK**, Kanemura T, **Mundis GM**, Imagama S, **Akbarnia BA**: *Effect of Race, Age and Gender on Lumbar Muscle Volume and Fat Infiltration in the Degenerative Spine.* J Orthop Sci. 2021 Jan; 26(1): 69-74

Katsuura Y, Lafage R, Kim HJ, Smith JS, Line B, Shaffrey C, Burton DC, Ames CP, **Mundis GM**, Hostin R, Bess S, Klineberg EO, Passias PA, Lafage V, International Spine Study Group (ISSG). *Alignment Targets, Curve Proportion and Mechanical Loading: Preliminary Analysis of an Ideal Shape Toward Reducing Proximal Junctional Kyphosis.* Global Spine J, January 2021

Protosaltis TS, Stekas N, Smith JS, Soroceanu A, Lafage R, Daniels AH, Kim HJ, Passias PG, **Mundis GM**, Klineberg EO, Hamilton DK,



Dr. Akbarnia accepts Robert Campbell Jr. Award for Innovation in Early Onset Scoliosis at 2021 International Congress on Early Onset Scoliosis (ICEOS).

Gupta M, Lafage V, Hart RA, Schwab F, Burton DC, Bess S, Shaffrey CI, Ames C, International Spine Study Group. *A Risk Benefit Analysis of Increasing Surgical Invasiveness Relative to Frailty Status in Adult Spinal Deformity Surgery.* Spine (Phila PA 1976) February 2021.

Lafage R, Schwab F, Elysee J, Smith JS, Alshabab BS, Passias P, Klineberg E, Kim HJ, Shaffrey C, Burton D, Gupta M, **Mundis GM**, Ames C, Bess S, Lafage V, International Spine Study Group (ISSG). *Surgical Planning for Adult Spinal Deformity: Anticipated Sagittal Alignment Corrections According to the Surgical Level.* Global Spine J, February 2021

Virk S, Platz U, Bess S, Burton D, Passias P, Gupta M, Protosaltis T, Kim HJ, Smith JS, **Eastlack RK**, Kebaish K, **Mundis GM Jr**, Nunley P, Shaffrey C, Gum J, Lafage V, Schwab F; International Spine Study Group 13. *Factors Influencing Upper-Most Instrumented Vertebrae*

Selection in Adult Spinal Deformity Patients: Qualitative Case-Based Survey of Deformity Surgeons. J Spine Surg, 7(1):37-47, March 2021

Robles LA, **Mundis GM**. *Chondromas of the Lumbar Spine: A Systematic Review.* Global Spine J, 11(2):232-239, March 2021

Shahidi B, Schenk S, Raiszadeh R. *Analgesic Medication Use During Exercise-Based Rehabilitation in Individuals with Low Back Pain: A Call to Action.* Physical Therapy. 2021. Mar 3;101(3)

Raiszadeh K, Tapicer J, Taitano L, Wu J, **Shahidi B**. *In-Clinic versus Online Multidisciplinary Exercise-Based Rehabilitation for Treatment of Low Back Pain: A Prospective Clinical Trial in an Integrated Practice Unit Model.* J Med Internet Res. 2021. 23(3):e22548.

Passias PG, Bortz C, Pierce KE, Kummer N, Lafage R, Diebo BG, Line BG, Lafage V, Burton DC, Klineberg EO, Kim HJ, Daniels AH, **Mundis GM**, Protosaltis TS, **Eastlack RK**, Sciubba DM, Bess S, Schwab FJ, Shaffrey CI, Smith JS, Ames CP, International Spine Study Group (ISSG). *Appropriate Risk Stratification and Accounting for Age-Adjusted Reciprocal Changes in the Thoracolumbar Spine Reduces the Incidence and Magnitude of Distal Junctional Kyphosis in Cervical Deformity Surgery.* Spine (Phila Pa 1976), March 2021

Lafage R, Ang B, Schwab F, Kim HJ, Smith JS, Shaffrey C, Burton D, Ames C, **Mundis G**, Hostin R, Bess S, Klineberg E, Passias P, Lafage V; International Spine Study Group (ISSG). *Depression Symptoms Are Associated with Poor Functional Status Among Operative Spinal Deformity Patients.* Spine (Phila Pa 1976). 2021 Apr 1;46(7):447-456

Chou D, Chan AY, Park P, **Eastlack RK**, Fu KM, Fessler RG, Than KD, Anand N, Uribe J, Okonkwo DO, Kanter AS, Nunley P, Wang MY, **Mundis GM Jr**, Mummaneni PV; International Spine Study Group. *Revision Surgery Rates After Minimally Invasive Adult Spinal Deformity Surgery: Correlation with Roussouly Spine Type at 2-Year Follow-Up?* World Neurosurg, 148:e482-e487, April 2021

Yao YC, Kim HJ, Bannwarth M, Smith J, Bess S, Klineberg E, Ames CP, Shaffrey CI, Burton D, Gupta M, **Mundis GM**, Hostin R, Schwab F, Lafage V. *Lowest Instrumented Vertebra Selection to S1 or Ilium versus L4 or L5 in Adult Spinal Deformity: Factors for Consideration in 349 Patients with a Mean 46-Month Follow-Up.* Global Spine J, April 2021

Varley ES, **Pawelek JB**, **Mundis GM Jr**, Oetgen ME, Sturm PF, **Akbarnia BA**, Pediatric Spine Study Group Yaszay B. *The Role of Traditional Growing Rods in the Era of Magnetically Controlled Growing Rods for the Treatment of Early Onset Scoliosis.* Spine Deform, April 2021



Morse KW, Lafage R, Passias P, Ames CP, Hart R, Shaffrey CI, **Mundis G**, Protosaltis T, Gupta M, Klineberg E, Burton D, Lafage V, Kim HJ; International Spine Study Group. *A Comparison of Three Different Positioning Techniques on Surgical Corrections and Postoperative Alignment in Cervical Spinal Deformity (CD) Surgery.* Spine (Phila Pa 1976), 46(9):567-570, May 2021

Kim HJ, Yao YC, Bannwarth M, Smith JS, Klineberg EO, **Mundis GM**, Protosaltis TS, Charles-Elysee J, Bess S, Shaffrey CI, Passias PG, Schwab FJ, Ames CP, Lafage V, International Spine Study Group (ISSG). *Cervicothoracic Versus Proximal Thoracic Lower Instrumented Vertebra Have Comparable Radiographic and Clinical Outcomes in Adult Cervical Deformity.* Global Spine J, May 2021

Bannwarth M, Smith JS, Bess S, Klineberg EO, Ames CP, **Mundis GM**, Kim HJ, Lafage R, Gupta MC, Burton DC, Shaffrey CI, Schwab FJ, Lafage V; and the International Spine Study Group (ISSG). *Use of rhBMP-2 for Adult Spinal Deformity Surgery: Patterns of Usage and Changes Over the Past Decade.* Neurosurg Focus. 2021 Jun;50(6):E4

Berry DB, Grant CD, Farnsworth CL, Englund EK, Newton PO, **Shahidi B**. *The Influence of 3D Curve Severity on Paraspinal Muscle Fatty Infiltration in Patients with Adolescent Idiopathic Scoliosis*. Spine Deformity. Jul;9(4):987-995. 2021

Shahidi B, Behun J, Berry DB, Raiszadeh K, Englund EK. *Intravoxel Incoherent Motion Imaging Predicts Exercise-Based Rehabilitation Response in Individuals with Low Back Pain*. NMR Biomed. Jul 29:e4595.

Podium Presentations

Ahmad W, Passias PG, Lafage R, LaFage V, Lina BG, **Mundis GM**, **Eastlack RK**, Nunley PD, Hamilton DK, Hart RA, Burton DC, Sshaffrey CI, Schwab FJ, Ames CP, Smith JS, Bess S, Paper #16, *Critical Analysis of Anterior/Posterior Staged vs. Same Day Surgery in Patients Undergoing Identical Corrective Surgery for Adult Spinal Deformity*, Scoliosis Research Society, 55th Annual Meeting, Live Sessions: September 9-13, 2020

Eastlack RK, Soroceanu M, **Mundis GM**, Daniels AH, Smith JS, Lina BG, Passias PG, Nunley PD, Okonkwo DD, Than KD, Uribe JS, Mummaneni PV, Chou D, Shaffrey CI, Bess S, Paper #23, *Rates of Loosening, Failure, and Revision of Iliac Fixation in Adult Deformity Surgery*, Scoliosis Research Society, 55th Annual Meeting, Live Sessions, September 9-13, 2020

Passias PG, Pierce KE, BS; Lafage R, Lafage V, Hamilton DK, **Mundis GM**, Kim HJ, Hostin R, Daniels AH, Hart RA, Burton DC, Sshaffrey CI, Schwab FJ, Ames CP, Smith JS, Bess S, Klineberg EO, Paper #48: *When Not to Operate in Spinal Deformity: Identifying Subsets of Patients With Simultaneous Clinical Deterioration, Major Complications, and Reoperation*, Scoliosis Research Society, 55th Annual Meeting, Live Sessions, September 9-13, 2020

Line, BG, Bess S, Yeramaneni S, Hostin R, Ames CP, Lafage V, Lafage R, Burton DC, Klineberg EO, Gupta MC, **Eastlack RK**, Passias PG, Protosaltis TS, Hart, RA, Kebaish KM, Kim HJ, Schwab FJ, Shaffrey CI, Smith JS, Paper #50, *Opioid Use Prior to Adult Spine Deformity (ASD) Surgery is Associated with Decreased Cost Effectiveness: A Matched Cohort Analysis*, Scoliosis Research Society, 55th Annual Meeting, Live Sessions, September 9-13, 2020

Lafage R, Smith JS, **Ames CP**, Passias PG, Shaffrey CI, **Mundis GM**, Protosaltis TS, Gupta MC, Klineberg EO, Elysee J, Kim HJ, Bess S, Schwab FJ, Lafage V, Paper #76, *When Can We Expect Global Sagittal Alignment to Reach a Stable Value Following Cervical Deformity Surgery?* Scoliosis Research Society, 55th Annual Meeting, Self-Paced Program, September 3-December 31, 2020

Protosaltis TS, Balouch E, Schreiber-Stainthorp W, **Eastlack RK**, Smith JS, Hamilton DK, Daniels AH, Klineberg EO, Neuman BJ, Hart RA, Bess S, Shaffrey CI, Schwab FJ, Lafage V, Ames CP, Paper #77, *Failure Mechanisms and Revision Strategies for DJK Following Cervical Deformity Correction*, Scoliosis Research Society, 55th Annual Meeting, Self-Paced Program, September 3-December 31, 2020

Godzik J, Lehrman JN, De Andrada B, Ames CP, Koller H, Newcomb AS, **Turner JD**, Kelly BP, Paper #78, *Optimizing Cervicothoracic Junction Biomechanics after C7 Pedicle Subtraction Osteotomy: A*



Robert Eastlack and Gregory Mundis, Jr. in discussion at the SRS Annual Meeting

Cadaveric Study of Stability and Rod Strain, Scoliosis Research Society, 55th Annual Meeting, Self-Paced Program, September 3-December 31, 2020

Murphy RF, Emans JB, Sponseller PD, Marks DS, Skaggs DL, Thompson GH, Flynn JM, **Akbarnia BA**, Smith JT, Sawyer JR, Paper #87, *Revision Rates of 5-Year Minimum Graduates of Growth Friendly Surgery for Early Onset Scoliosis*, Scoliosis Research Society, 55th Annual Meeting, Self-Paced Program, September 3-December 31, 2020



Soroceanu M, Protosaltis TS, **Mundis GM**, Smith JS, Kelly MP, Daniels AH, Klineberg EO, Ames CP, Hart RA, Bess S, Shaffrey CI, Schwab FJ, LaFage V, Gupta MC, Paper #103, *Low Pelvic Incidence (PI) Patients Are at High Risk of Over Correction Following ASD Surgery*, Scoliosis Research Society, 55th Annual Meeting, Self-Paced Program, September 3-December 31, 2020

Daniels AH, Durand WM, Steinbaum A, Lafage R, Hamilton DK, Passias PG, Kim HJ, Protosaltis TS, Lafage V, Smith JS, Shaffrey CI, Gupta MC, Klineberg EO, Schwab FJ, Gum JL, **Mundis GM**, **Eastlack RK**, Soroceanu A, Hostin R, Burton DC, Bess S, Ames CP, Hart RA, Paper #141, *Examination of Adult Spinal Deformity Patients Undergoing Surgery With and Without Implanted Spinal Cord Stimulators and Intrathecal Pumps*. Scoliosis Research Society, 55th Annual Meeting, Self-Paced Program, September 3-December 31, 2020

Durand WM. Lafage R, Hamilton DK, Passias PG, Kim HJ, Protosaltis TS, LaFage V, Smith JS, Shaffrey CI, Gupta MC, Klineberg EO, Schwab FJ, Gum JL, **Mundis GM**, **Eastlack RK**, Kebaish KM; Soroceanu A, Hostin R, Burton DC, Bess S, Ames CP, Hart RA, Daniels AH, Half-Day Course Abstract Supplement (Adult), *Artificial Intelligence Clustering of Adult Spinal Deformity Morphology Predicts Surgical Characteristics, Alignment, and Outcomes*, Scoliosis Research Society, 55th Annual Meeting, Self-Paced Program, September 3-December 31, 2020

Fessler RG, Fu K-MG, Park P, Chou D, **Eastlack RK**, **Mundis GM**, Than KD, Anand N, Okonkwo DD, Wang MY, Kanter AS, Nunley PD, Mummaneni PV, Half-Day Course Abstract Supplement (Adult) *Complication Rate in Obese vs Non-Obese Patients Undergoing*

Minimally Invasive Surgery for Correction of Adult Spinal Deformity, Scoliosis Research Society, 55th Annual Meeting, Self-Paced Program, September 3–December 31, 2020

Godzik J, Mundis GM, Turner JD, Uribe JS, **Eastlack RK**, Half-Day Course Abstract Supplement (Adult) *High Radiation Burden of Minimally Invasive Approaches for Adult Spinal Deformity*, Scoliosis Research Society, 55th Annual Meeting, Self-Paced Program, September 3–December 31, 2020

Eastlack RK, Soroceanu A, **Mundis GM**, Smith JS, Line B, Passias PG, Nunley PD, Okonkwo DO, Than KD, Uribe JS, Chou D, Kebaish KM, Shaffrey CI, Bess S, ISSG, *Use of ALIF at The Lumbosacral Junction Results in Less Lumbopelvic Fixation Failure Than TLIF or No Interbody Fusion Following Correction of Adult Spinal Deformity*, **Best Paper Nominee #1**, North American Spine Society, Virtual Experience, October 6–9, 2020

Mundis GM, Rios F, Mundis L, Hicks M, Global Spine Outreach (GSO): *How to Safely Establish a Sustainable Short-Term Spine Deformity Outreach Program*, **Best Paper Nominee #3**, North American Spine Society, Virtual Experience, October 6–9, 2020

Hamilton K, Durand WM, Kim HJ, Lafage R, Passias PG, Protosaltis TS, Lafage V, Smith JS, Shaffrey CI, Gupta MC, Klineberg EO, Smith FJ, Gum JL, **Mundis GM, Eastlack RK**, Kebaish KM, Soroceanu A, Hostin RA, Burton DC, Bess S, Ames CP, Hart RA, Daniels AH, ISSG, *Low Density Pedicle Screw Constructs are Associated with Lower Incidence of Proximal Junctional Failure in Adult Spinal Deformity Surgery*, **Best Paper Nominee #84**, North American Spine Society, Virtual Experience, October 6–9, 2020

Mundis GM, Russell N, Walsh W, Kim P, Chen J, Vizesi F, *Why are DBMs so Variable? Influence of Fibers, Carrier, and Tissue Bank*, **Best Paper Nominee #86**, North American Spine Society, Virtual Experience, October 6–9, 2020

Eastlack RK, Soroceanu A, **Mundis GM**, Daniels AH, Smith JS, Line B, Passias PG, Nunley PD, Okonkwo DO, Than KD, Uribe JS, Chou D, Kebaish KM, Shaffrey CI, Bess S, ISSG, *Rates of Loosening, Failure, and Revision of Iliac Fixation in Adult Deformity Surgery*, **Best Paper Nominee #87**, North American Spine Society, Virtual Experience, October 6–9, 2020

Mundis GM, Vizesi F, Russell N, He J, Bess S, ISSG, *Do Cells Matter? In Vitro and In Vivo Analysis of Autograft Viability*, **Best Paper Nominee # 157**, North American Spine Society, Virtual Experience, October 6–9, 2020

Passias PG, Naessig S, Lafage V, Lafage R, Diebo BG, Protosaltis TS, Kim HJ, **Eastlack RK**, Soroceanu A, Klineberg EO, Hart RA, Burton DC, Bess S, Schwab FJ, Shaffrey CI, Smith JS, Ames CP, ISSG, *Predicting Severe Clinically Relevant Distal Junctional Kyphosis Development Following Adult Cervical Deformity Surgery with Further Distinction from Mild Asymptomatic Episodes*, **Best Paper Nominee # 163**, North American Spine Society, Virtual Experience, October 6–9, 2020.

Line B, Bess S, Ames CP, **Eastlack RK, Mundis GM**, Lafage V, Klineberg EO, Gupta MC, Hostin RA, Burton DC, Kelly MP, Kebaish

KM, Schwab FJ, Shaffrey CI, Smith JS, ISSG, *Opioid Use Prior to Adult Spine Deformity (ASD) Surgery Worsens Postoperative Outcomes and Risks Continued Postoperative Use, Independent of Spine Deformity Magnitude and Type of Surgery Performed: A Propensity Matched Cohort Analysis*. Abstract # 38, North American Spine Society, Virtual Experience, October 6-9, 2020.

Ahmed W, Passias PG, Lafage R, Lafage V, Line B, **Mundis GM, Eastlack RK**, Nunley PD, Hamilton DK, Hart RA, Burton DC, Shaffrey CI, Schwab FJ, Ames CP, Smith JS, Bess S, Klineberg EO, ISSG, *Critical Analysis of Anterior/Posterior Staged vs. Same Day Surgery in Patients Undergoing Identical Corrective Surgery for Adult Spinal Deformity*. Abstract # 39, North American Spine Society, Virtual Experience, October 6-9, 2020.

Mundis GM, Eastlack RK, Anand N, Klineberg EO, Uribe JS, Kim HJ, Wang MY, Nunley PD, Kanter AS, Bess S, Schwab FJ, Park P, Than KD, Protosaltis TS, Lafage V, Lafage R, ISSG, *Is Percutaneous Pedicle Screw (PPS) Fixation Associated with Minimized Risk of Perioperative Proximal Junctional Kyphosis (PJK) in Adult Spinal Deformity?* Abstract # 52, North American Spine Society, Virtual Experience, October 6-9, 2020.

Chou D, Passias PG, **Mundis GM**, Lafage R, **Eastlack RK**, Fu K-MG, Fessler RG, Park P, Than KD, Anand N, Uribe JS, Kanter AS, Bess S, Klineberg EO, Kim HJ, Hostin RA, Kebaish KM, Gupta MC, Lafage V, ISSG, *What is the Difference in Patient Outcomes in Circumferential Minimally Invasive (cMIS) vs Open Correction of Adult Scoliosis?* Abstract # 94, North American Spine Society, Virtual Experience, October 6-9, 2020.

Klineberg EO, Lafage R, Lafage V, Smith JS, Shaffrey CI, **Mundis GM**, Kim HJ, Gupta MC, Ames CP, Passias PG, Protosaltis TS, Burton DC, Schwab FJ, Bess S, ISSG, *Complications Following Adult Spinal Deformity Impact Length of Stay and are Driven by Intervention Severity and Can Be Predicted Using a Weighted Score*. Abstract # 97, North American Spine Society, Virtual Experience, October 6-9, 2020.

Walker C, Godzik J, Turner JD, Uribe JS, *Radiographic Predictors of Indirect Neural Decompression in Minimally Invasive Transpoas Lateral Interbody Fusion*. Abstract # 109, North American Spine Society, Virtual Experience, October 6-9, 2020.

Passias PG, Pierce KE, Lafage V, Lafage R, **Mundis GM**, Gum JL, Kebaish KM, **Eastlack RK**, Diebo BG, Smith JS, Ames CP, Shaffrey CI, Burton DC, Hart RA, Bess S, Schwab FJ, Gupta MC, ISSG, *The Incremental Clinical Benefit of Adding Layers of Complexity to the Planning and Execution of Adult Spinal Deformity Corrective Surgery*. Abstract # 118, North American Spine Society, Virtual Experience, October 6-9, 2020.

Buell T, Smith JS, Shaffrey CI, Kim HJ, Klineberg EO, Lafage V, Lafage R, Protosaltis TS, Passias PG, **Mundis GM, Eastlack RK**, Deviren V, Kelly MP, Daniels AH, Gum JL, Soroceanu A, Hamilton DK, Gupta MC, Burton DC, Hostin RA, Kebaish KM, Hart RA, Schwab FJ, Bess S, Ames CP, ISSG, *Multicenter Prospective Assessment of Outcomes and Complications Associated with Adult Spinal Deformity Surgery in 62 Patients with Severe Global Coronal Malalignment*,

Abstract # 135, North American Spine Society, Virtual Experience, October 6-9, 2020.

Klineberg EO, Agatstein L, Lafage R, Smith JS, Shaffrey CI, **Mundis GM**, Kim HJ, Gupta MC, Kelly MP, Ames CP, Passias PG, Protopsaltis TS, Burton DC, Schwab FJ, Bess S, Lafage V, ISSG, *Neurologic Complications Following Adult Spinal Deformity and Impact on Health-Related Quality of Life Measures*. Abstract # 147, North American Spine Society, Virtual Experience, October 6-9, 2020.

Pierce KE, Passias PG, Lafage V, Lafage R, **Mundis GM**, Uribe JS, Kim HJ, Protopsaltis TS, Daniels AH, Hart RA, Burton DC, Shaffrey CI, Schwab FJ, Ames CP, Smith JS, Bess S, Klineberg EO, ISSG, *Validation of the ACS-NSQIP Risk Index in a Prospective, Multicenter Adult Spinal Deformity Database*. Abstract # 167, North American Spine Society, Virtual Experience, October 6-9, 2020.

Durand WM, Daniels AH, Lafage R, Passias PG, Kim HJ, Protopsaltis TS, Lafage V, Smith JS, Shaffrey CI, Gupta MC, Klineberg EO, Schwab FJ, Gum JL, **Mundis GM**, **Eastlack RK**, Kebaish KM, Soroceanu A, Hostin RA, Burton DC, Bess S, Ames CP, Hart RA, Hamilton DK, ISSG, *Multiple Revision Surgeries are Associated with Reduced Patient Satisfaction in Adult Spinal Deformity*. Abstract # 191, North American Spine Society, Virtual Experience, October 6-9, 2020.

Soroceanu A, Protopsaltis TS, **Mundis GM**, Smith JS, Kelly MP, Daniels AH, Klineberg EO, Ames CP, Hart RA, Bess S, Shaffrey CI, Schwab FJ, Lafage V, Gupta MC, ISSG, *Low Pelvic Incidence (PI) Patients are at High Risk of Over Correction Following ASD Surgery*. Abstract # 208, North American Spine Society, Virtual Experience, October 6-9, 2020.



Hazem Elsebaie presenting at 2021 International Congress on Early Onset Scoliosis (ICEOS)

Protopsaltis TS, Soroceanu A, **Mundis GM**, Smith JS, Gum JL, Daniels AH, Ames CP, Hart RA, Bess S, Shaffrey CI, Schwab FJ, Lafage V, Klineberg EO, ISSG, *Complications and Outcomes in Small vs Large Surgeries for ASD*. Abstract # 211, North American Spine Society, Virtual Experience, October 6-9, 2020.

Buell T, Smith JS, Shaffrey CI, Kim HJ, Klineberg EO, Lafage V, Lafage R, Protopsaltis TS, Passias PG, **Mundis GM**, **Eastlack RK**, Deviren V, Kelly MP, Daniels AH, Gum JL, Soroceanu A, Hamilton DK, Gupta MC, Burton DC, Hostin RA, Kebaish KM, Hart RA, Schwab FJ, Bess S, Ames CP, ISSG, *Operative Treatment of Adult Spinal*

Deformity Patients with Severe Scoliosis: Retrospective Review of a Prospectively Collected Multicenter Series with Minimum 2-Year Follow Up. Abstract # 212, North American Spine Society, Virtual Experience, October 6-9, 2020.

Pinteric R, Bess S, Line B, Kelly MP, Ames CP, **Mundis GM**, **Eastlack RK**, Hostin RA, Klineberg EO, Gupta MC, Kebaish KM, Lafage V, Lafage R, Burton DC, Schwab FJ, Shaffrey CI, Smith JS, ISSG, *Contrary to Popular Belief, Self-Image in Adult Spinal Deformity (ASSD) is Most Correlated with Physical and Social Function and Mental Health and Minimally Correlated with Magnitude of Spine Deformity*. Abstract # 216, North American Spine Society, Virtual Experience, October 6-9, 2020.

Soroceanu A, Scheer JK, Protopsaltis TS, Gupta MC, Passias PG, Gum JL, Smith JS, **Mundis GM**, Bess S, Lafage V, Ames CP, Klineberg EO, ISSG, *Predicting Massive Intraoperative Blood Loss in Adult Spinal Deformity Surgery*. Abstract # 245, North American Spine Society, Virtual Experience, October 6-9, 2020.

Pierce KE, Passias PG, Lafage V, Lafage R, Protopsaltis TS, Kim HJ, **Eastlack RK**, Daniels AH, Hamilton DK, Soroceanu A, Hart RA, Burton DC, Bess S, Schwab FJ, Shaffrey CI, Smith JS, Ames CP, ISSG, *Does Patient Frailty Status Influence Recovery Patterns and Ultimate Outcome Following Spinal Fusion for Cervical Deformity?* Abstract # 256, North American Spine Society, Virtual Experience, October 6-9, 2020.

Line B, Bess S, Yeramaneni S, Hostin RA, Ames CP, Lafage V, Lafage R, Burton DC, Klineberg EO, Gupta MC, Kelly MP, **Mundis GM**, **Eastlack RK**, Passias PG, Protopsaltis TS, Hart RA, Kebaish KM, Kim HJ, Schwab FJ, Shaffrey CI, Smith JS, ISSG, *Opioid Use Prior to Adult Spinal Deformity Surgery is Associated with Decreased Cost Effectiveness: A Matched Cohort Analysis*. Abstract # 262, North American Spine Society, Virtual Experience, October 6-9, 2020.

Ratnayake R, **Mundis GM**, **Shahidi B**, **Akbarnia BA**, **Eastlack RK**, *Assessment of Impact of Single Photon Emission Computed Tomography (SPECT) on Management of Degenerative Cervical and Lumbar Disease: A Multi-Institution Survey of Spine Surgeons*. Abstract # 264, North American Spine Society, Virtual Experience, October 6-9, 2020.

Gum JL, Carreon LY, Yagi M, Hosogane N, Watanabe K, Smith JS, Shaffrey CI, Kim HJ, Klineberg EO, Lafage V, Lafage R, Protopsaltis TS, Passias PG, **Mundis GM**, **Eastlack RK**, Kelly MP, Daniels AH, McNeely E, Soroceanu A, Hamilton DK, Gupta MC, Burton DC, Hostin RA, Kebaish KM, Hart RA, Schwab FJ, Bess S, Ames CP, ISSG, *Opioid Use After Adult Spinal Deformity Surgery: Propensity-Matched Comparison of Japanese versus American Cohorts*. Abstract # 275, North American Spine Society, Virtual Experience, October 6-9, 2020.

Passias PG, Naessig S, Pierce KE, Lafage R, Lafage V, **Eastlack RK**, Daniels AH, Protopsaltis TS, Klineberg EO, **Mundis GM**, Hart RA, Burton DC, Bess S, Schwab FJ, Shaffrey CI, Smith JS, Ames CP, ISSG, *Establishment of an Individualized Distal Junctional Kyphosis Risk Index Taking into Account Radiographic and Surgical Components*. Abstract # 282, North American Spine Society, Virtual Experience, October 6-9, 2020.

Malone H, Mundis G, Collier M, Kidwell R, **Rios F, Akbarnia B, Eastlack R**. *A Novel Approach to Evaluating Lateral Lumbar Interbody Fusion Using a 3-D Printed Porous Titanium Interbody Device*. Society for Minimally Invasive Spine Surgery (SMISS). SMISS Annual Meeting. Las Vegas, Nevada. October 2020

Hardesty C, Murphy RF, **Pawelek JP**, Glotzbecker MP, **Hosseini P**, Johnston CE, Emans JB, **Akbarnia BA**, PSSG: *Defining an Early Onset Scoliosis "Graduate" – The Pediatric Spine Study Group Experience*. 14th International Congress on Early Onset Scoliosis. Virtual Meeting, November 14, 2020 -



Shahrivini B, **Shahidi B**, Fennessy J, Grant C, Parekh J, Zlomislic V, Garfin S, Allen RT. *The Influence of Prophylactic Cement Augmentation on Surgical Revision Rates in Spinal Fusion Surgery*. WMRC (virtual conference), January 2021.

Raiszadeh K, Tapicer J, **Shahidi B**. *In-Clinic vs Online Multidisciplinary Exercise-Based Low Back Pain Rehabilitation: A Prospective Clinical Trial*. APTA Combined Sections Meeting, February 2021.

Buell TJ, Le V, Chou D, **Eastlack RK**, Fu K-MG, Uribe JS, **Mundis GM**, Anand N, Nunley PD, Okonkwo DO, Fessler RG, Park P, Wang MY, Kanter AS, Shaffrey CI, Mummaneni PV, Than KD, ISSG, *Global Coronal Malalignment After MIS Adult Spinal Deformity Surgery: Multicenter Prospective Assessment of 141 Patients with Minimum 1-Year Follow-Up*, Paper #2, 28th International Meeting on Advanced Spine Techniques, Virtual Experience, April 23-25, 2021

Pierce KE, Passias PG, Lafage R, Lafage V, Burton DC, Daniels AH, **Eastlack RK**, Hamilton DK, Hart RA, Kim HJ, Protosaltis TS, Soroceanu A, Bess S, Schwab FJ, Shaffrey CI, Smith JS, Ames CP, ISSG, *Does Patient Frailty Status Influence Recovery Patterns and Ultimate Outcome Following Spine Fusion for Cervical Deformity?* Paper #13, 28th International Meeting on Advanced Spine Techniques, Virtual Experience, April 23-25, 2021.

Elysée JC, Lafage R, Bess S, Shaffrey CI, Kim HJ, Ames CP, Burton DC, Gupta MD, Smith JS, **Eastlack RK**, Klineberg E, **Mundis GM**, Schwab FJ, Lafage V, ISSG, *Consistent and Pathognomonic Modes of Failure Occur at the Proximal Junction Depending Upon the Type of Instrumentation Used: A Two-Step Cluster Analysis to Better Understand Proximal Junctional Failure (PJF)*, Paper #25, 28th International Meeting on Advanced Spine Techniques, Virtual Experience, April 23-25, 2021

Naessig S, Passias PG, Ahmad W, Pierce KE, Lafage R, Lafage V, **Eastlack RK**, Kim HJ, Hamilton DK, Protosaltis TS, Soroceanu A, Klineberg E, Hart RA, Burton DC, Bess S, Schwab FJ, Shaffrey CI, Smith JS, Ames CP, Vira S, ISSG, *Treatment of Cervical Deformity in the Presence of a Secondary Thoracic Deformity: Outcomes Based on Inclusion and Age-Adjusted Normalization*. Paper # 30, 28th International Meeting on Advanced Spine Techniques, Virtual Experience, April 23-25, 2021

Mundis GM, Rios F, Malone H, Shahidi B, Iannacone TL, Galli S,

Eastlack RK, *The Effect of a Transdisciplinary Spine Conference on Quality and Safety for Adult Spinal Deformity Surgery*, Paper #36, 28th International Meeting on Advanced Spine Techniques, Virtual Experience, April 23-25, 2021

Eastlack RK, Malone H, Akbarnia BA, Collier M, **Elsebaie HB**, Monjazeb B, **Shahidi B, Mundis GM**, *A Novel Intervertebral Fusion Classification System for the Advent of Bioactive Interbody Implants*, The International Society for the Advancement of Spine Surgery (ISASS) 21st Annual Meeting, Miami Beach, FL, May 13-15, 2021

Record NC, Carnelian A, Brady K, **Shahidi B, Akbarnia BA, Eastlack RK, Mundis GM**, *Are Neuromonitoring Alerts Predictive of Post-Operative Deficits in Lateral Lumbar Interbody Fusion?* The International Society for the Advancement of Spine Surgery (ISASS) 21st Annual Meeting, Miami Beach, FL, May 13-15, 2021

Shahidi B, Anderson B, Iannacone T, Moltzen CA, **Eastlack RK, Mundis GM**, *Peak Force of the Posterior Ligamentous Complex in Patients with Adult Spinal Deformity Requiring Revision Surgery*, Spine Summit 2021, The Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, San Diego, CA, July 28-31, 2021

Summary of Poster Exhibits

Klineberg E, Lafage R, Smith JS, Shaffrey CI, **Mundis GM**, Kim HJ, Gupta MC, Kelly MP, Ames CP, Passias PG, Protosaltis TS, Burton DC, Schwab FJ, Bess S, Lafage V, ISSG, *Neurologic Complications Following Adult Spinal Deformity and Impact on Health-Related Quality of Life Measures*, E-Poster #56, 28th International Meeting on Advanced Spine Techniques, Virtual Experience, April 23-25, 2021

Klineberg E, Lafage R, Lafage V, Smith JS, Shaffrey CI, **Mundis GM**, Kim HJ, Gupta MC, Ames CP, Passias PG, Protosaltis TS, Burton DC, Schwab FJ, Bess S, ISSG, *Complications Following Adult Spinal Deformity Impact Length of Stay and are Driven by Intervention Severity and Can be Predicted Using a Weighted Score*, E-Poster #57, 28th International Meeting on Advanced Spine Techniques, Virtual Experience, April 23-25, 2021

Uribe JS, Gandhi SV, Park P, Shaffrey CI, **Eastlack RK**, Chou D, Fessler RG, **Mundis GM**, Bess S, Kanter AS, Okonkwo DO, Hamilton DK, Anand N, Wang MY, Than KD, Fu K-MG, La Marca F, Nunley PD, Lafage V, Lafage R, Mummaneni PV, ISSG, *Comparison of Complications and 90 Day Readmissions Between Open and Minimally Invasive Surgery for Adult Spinal Deformity*, E-Poster #60, 28th International Meeting on Advanced Spine Techniques, Virtual Experience, April 23-25, 2021

Fu K-MG, Hussain I, Shaffrey CI, **Eastlack RK, Mundis GM**, Uribe JS, Fessler RG, Park P, Rivera J, Chou D, Kanter AS, Okonkwo DO, Nunley PD, Wang MY, La Marca F, Than KD, Mummaneni PV, *The Minimally Invasive Interbody Selection Algorithm for Spinal Deformity*, E-Poster #62, 28th International Meeting on Advanced Spine Techniques, Virtual Experience, April 23-25, 2021

Lafage R, Smith JS, Ames, CP, Passias PG, Shaffrey CI, **Mundis GM**,

Protopsaltis TS, Gupta MC, Klineberg E, Elysée JC, Kim HJ, Bess S, Schwab FJ, Lafage V, ISSG, *Predicting Mechanical Failure Following Cervical Deformity Surgery: A Composite Score Integrating Age-Adjusted Cervical Alignment Targets*, E-Poster #81, 28th International Meeting on Advanced Spine Techniques, Virtual Experience, April 23-25, 2021

Passias PG, Naessig S, Lafage R, Lafage V, Diebo BG, Protopsaltis TS, Kim HJ, **Eastlack RK**, Soroceanu A, Klineberg EO, Hart RA, Burton DC, Bess S, Schwab FJ, Shaffrey CI, Smith JS, Ames CP, ISSG, *Predicting Severe Clinically Relevant Distal Junctional Kyphosis Development Following Adult Cervical Deformity Surgery with Further Distinction from Mild Asymptomatic Episodes*, E-Poster # 210, Scoliosis Research Society, 55th Annual Meeting, Self-Paced Program, September 3-December 31, 2020

Pierce KE, Passias PG, Lafage R, Lafage V, Kim HJ, Daniels AH, **Eastlack RK**, Klineberg EO, Line BG, Mummaneni PV, Protopsaltis TS, Burton DC, Bess S, Schwab FJ, Shaffrey CI, Smith JS, Ames CP, ISSG, *Disparities in Etiology, Clinical Presentation and Determinants for Distal Junctional Kyphosis Based on Timing of Occurrence: Are We Treating Two Separate Issues?* E-Poster # 213, Scoliosis Research Society, 55th Annual Meeting, Self-Paced Program, September 3-December 31, 2020

Daniels AH, Durand WM, Lafage R, Hamilton DK, Passias PG, Kim HJ, Protopsaltis TS, Lafage V, Smith JS, Shaffrey CI, Gupta MC, Klineberg EO, Schwab FJ, Gum JL, **Mundis GM, Eastlack RK**, Kebaish KM, Soroceanu A, Hostin R, Burton DC, Bess S, Ames CP, Hart RA, ISSG, *Assessment of Lateral Thoracolumbar Listhesis as a Predictor of Disability in Adult Scoliosis Patients Prior to and Following Surgical Realignment Surgery*. E-Poster # 216, Scoliosis Research Society, 55th Annual Meeting, Self-Paced Program, September 3-December 31, 2020

Mundis GM, Eastlack RK, Mummaneni PV, Anand N, Klineberg EO, Uribe JS, Kim HJ, Wang MY, Nunley PD, Kanter AS, Bess S, Schwab FJ, Park P, Than KD, Protopsaltis TS, Lafage V, Lafage R, ISSG, *Is Percutaneous Pedicle Screws (PPS) Fixation Associated with Minimized Risk of Perioperative Proximal Junctional Kyphosis (PJK) in Adult Spinal Deformity?* E-Poster # 222, Scoliosis Research Society, 55th Annual Meeting, Self-Paced Program, September 3-December 31, 2020

Mundis GM, Lafage R, Lafage V, **Eastlack RK**, Klineberg EO, Passias PG, Protopsaltis TS, Soroceanu A, Shaffrey CI, Smith JS, Bess S, Kebaish KM, Gupta MC, Hostin R, Kelly MP, Kim HJ, ISSG, *Should Prior Cervical Fusions be Considered During Level Selection in Adult Spinal Deformity Surgery?* E-Poster # 223, Scoliosis Research Society, 55th Annual Meeting, Self-Paced Program, September 3-December 31, 2020

McCarthy MH, Lafage R, Smith JS, Bess S, Protopsaltis TS, Ames CP, Klineberg EO, Kim HJ, Shaffrey CI, Burton DC, **Mundis GM**, Gupta MC, Schwab FJ, Lafage V, ISSG, *How Much Lumbar Lordosis Does a Patient Need to Reach their Age-Adjusted Alignment Target? A Formulated Approach Predicting Successful Surgical Outcomes*. Poster # 11, North American Spine Society, Virtual Experience, October 6-9, 2020.

Mundis GM, Lafage R, Lafage V, **Eastlack RK**, Klineberg EO, Passias PG, Protopsaltis TS, Soroceanu A, Shaffrey CI, Smith JS, Bess S, Kebaish KM, Gupta MC, Hostin RA, Kelly MP, Kim HJ, ISSG, *Does Prior Cervical Fusion (CF) Affect PJK Rate and UIV Level Selection in Thoracolumbar Fusion Surgery for Adult Spinal Deformity (ASD)?* Poster # 23, North American Spine Society, Virtual Experience, October 6-9, 2020.

Durand WM, Lafage R, Hamilton DK, Passias PG, Kim HJ, Protopsaltis TS, Lafage V, Smith JS, Shaffrey CI, Gupta MC, Klineberg EO, Schwab FJ, Gum JL, **Mundis GM, Eastlack RK**, Kebaish KM, Soroceanu A, Hostin RA, Burton DC, Bess S, Ames CP, Hart RA, Daniels AH, ISSG, *Artificial Intelligence Clustering of Adult Spinal Deformity Morphology Predicts Surgical Characteristics, Alignment, and Outcomes*. Poster # 37, North American Spine Society, Virtual Experience, October 6-9, 2020.

Pierce KE, Passias PG, Lafage V, Lafage R, Kim HJ, Daniels AH, **Eastlack RK**, Klineberg EO, Line B, Protopsaltis TS, Burton DC, Bess S, Schwab FJ, Shaffrey CI, Smith JS, Ames CP, ISSG, *Disparities in Etiology, Clinical Presentation and Determinants for Distal Junctional Kyphosis Based on Timing of Occurrence: Are We Treating Two Separate Issues?* Poster # 48, North American Spine Society, Virtual Experience, October 6-9, 2020.

Pierce KE, Passias PG, Lafage R, Lafage V, **Mundis GM, Eastlack RK**, Kelly MP, Protopsaltis TS, Carreon LY, Line B, Hart RA, Burton DC, Bess S, Schwab FJ, Shaffrey CI, Smith JS, Ames CP, ISSG, *A Combined Anterior-Posterior Approach in Select Cervical Deformity Corrections has Potential for Superior Cost Effectiveness Driven by Outcomes*, Poster # 70, North American Spine Society, Virtual Experience, October 6-9, 2020.

Passias PG, Pierce KE, Lafage R, Lafage V, Hamilton DK, **Mundis GM**, Kim HJ, Hostin RA, Daniels AH, Hart RA, Burton DC, Shaffrey CI, Schwab FJ, Ames CP, Smith JS, Bess S, Klineberg EO, ISSG, *When Not to Operate in Spinal Deformity: Identifying Subsets of Patients with Simultaneous Clinical Deterioration, Major Complications, and Reoperation*. Poster # 71, North American Spine Society, Virtual Experience, October 6-9, 2020.

Buell T, Smith JS, Shaffrey CI, Kim HJ, Klineberg EO, Lafage V, Lafage R, Protopsaltis TS, Passias PG, **Mundis GM, Eastlack RK**, Deviren V, Kelly MP, Daniels AH, Gum JL, Soroceanu A, Hamilton DK, Gupta MC, Burton DC, Hostin RA, Kebaish KM, Hart RA, Schwab FJ, Bess S, Ames CP, ISSG, *Demographic Differences and Health Impact of Severe Global Sagittal, Coronal, and Mixed Spinal Deformity in Symptomatic Adults*. Poster # 80, North American Spine Society, Virtual Experience, October 6-9, 2020.

McNeely E, Neuman BJ, Sachdev R, Klineberg EO, Smith JS, **Mundis GM**, Soroceanu A, Hostin RA, Passias PG, Protopsaltis TS, Hamilton DK, Ames CP, Kebaish KM, ISSG, *Assessing Methods to Prevent Pseudarthrosis in ASD Surgery of Lesser Magnitude*. Poster # 82, North American Spine Society, Virtual Experience, October 6-9, 2020.

Invited Speakers



BA Akbarnia



RK Eastlack



GM Mundis



B Shahidi



R Ames



F Rios



H Malone

Gregory M. Mundis, MD, Scoliosis Research Society (SRS) and SICOT Pioneer *Distraction technique in EOS Management*, Webinar, October 9, 2020

Robert K. Eastlack, MD, North American Spine Society, Virtual Experience, October 6-9, 2020. Surgical Symposium: Complex Cervical Deformity, *Rigid vs. Flexible Cervical Deformity: Diagnosis and Treatment Guidelines*

Bahar Shahidi, PT, PhD, North American Spine Society, Virtual Experience, October 6-9, 2020, Medical Symposium: Muscle Health as a Biomarker for Functional Recovery Following Spine Pain and Injury. *The Lumbar Spine*

Gregory M. Mundis, MD, SRS WWC Shenzhen Tech Checks (2020 AIS Session): *Spine Surgery in The Outreach Setting*, November 20, 2020

Behrooz A. Akbarnia, MD, American Society of Orthopaedic Surgeons (AAOS) And Brazilian Orthopaedic Society. *Changing Trends in The Management of Early Onset Scoliosis*. Florianopolis, Brazil, November 12, 2020

Behrooz A. Akbarnia, MD, American Society of Orthopaedic Surgeons (AAOS) and Brazilian Orthopaedic Society. *Impact of MCGR on EOS: Indications and Complications*. Florianopolis, Brazil, November 12, 2020

Behrooz A. Akbarnia, MD, North American Spine Society (NASS) 3rd NASS Combined Virtual Meeting., Early Onset Scoliosis. Lahore, Pakistan, December 5, 2020

Gregory M. Mundis, MD, 6th Annual International Spinal Deformity Symposium, ISDS: The Americas, December 4, 2020

Gregory M. Mundis, MD, UW Neurological Surgery Grand Rounds (Neurological Surgery Education Series): *Spine Outreach and the Impact on Physician Wellness*, February 24, 2021

Gregory M. Mundis, MD, State of Spine Surgery, *Starting Right-Career Tips from End of Residency to 3-Years into Practice*, Webinar, March 24, 2021

Gregory M. Mundis, MD, 28th International Meeting on Advanced Spine Technique, Invited Faculty – Two Presentations: 1) *Unique Challenges and Limitations of MIS Techniques in ASD Management*; 2)

When Things Go Wrong in a “Simple” Case: Tips and Tricks on Technical Aspects to Minimize and Manage Neural Complications, Virtual Experience, April 23-25, 2021

Behrooz A. Akbarnia, MD, North American Spine Society (NASS). Webinar on Early Onset Scoliosis. *Evolution of Surgical Treatment of EOS*, Pakistan, April 26, 2021

Gregory M. Mundis, MD, Cedars Sinai Spine Surgery Grand Rounds, *MIS Deformity Corrections*, Guest Lecturer, Virtual Experience, May 12, 2021

Gregory M. Mundis, MD, University of Texas Southwestern Medical School, *Discussion of Anterior/Posterior Cases-Adult Deformity*, Guest Lecturer, Virtual Experience, May 27, 2021

Behrooz A. Akbarnia, MD, 1921-2021 Punch Bone and Joint International Congress. *Current Concepts of Non-Fusion Techniques in EOS Treatment*. (Virtual Presentation) Beijing, China, June 4, 2021

Gregory M. Mundis, MD, Spine Summit 2021, The Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, Three Presentations: 1) *Applying Deformity Principles to Patients with Degenerative Cervical Disease*; 2) *Single Position Lateral Surgery, No Alignment Correction and Risk of Misplaced Hardware, Debate: Con*; 3) Spine Summit Grand Rounds: Difficult Cases-The Decision-Making Dilemma, “*The Difficult Thoracic Case*”, San Diego, CA, July 28-31, 2021

Behrooz A. Akbarnia, MD, 2021 San Diego Visiting Professorship Annual Meeting, *New Trends in EOS Management*. La Jolla, CA, July 31, 2021

Gregory M. Mundis, MD, 2021 San Diego Visiting Professorship Annual Meeting, *The Role for 3D Printed Patient Specific Implants in MIS Deformity Surgery*, La Jolla, CA, July 31, 2021

Robert J. Ames, MD, 2021 San Diego Visiting Professorship Annual Meeting, *PSSG Research Update on Fixation Failure*, La Jolla, CA, July 31, 2021

Fernando Rios, MD, 2021 San Diego Visiting Professorship Annual Meeting, *EOS Management Challenges in Second World Countries*, La Jolla, CA, July 31, 2021

Robert K. Eastlack, MD, 2021 San Diego Visiting Professorship Annual Meeting, *Lateral Interbody Fusion: Prone is a Lawsuit Waiting to Happen*, La Jolla, CA, July 31, 2021

Hani Malone, MD, 2021 San Diego Visiting Professorship Annual Meeting, *Resilience as an Indicator for Successful Spine Surgery*, La Jolla, CA, July 31, 2021

Book Chapters

Rios F, Akbarnia BA, Mundis, GM: *Experience of EOS Management in Two Worlds – II: Early Onset Scoliosis: Guidelines for Management in Resource-Limited Settings*. Ahamd and Agarwal, Editors. 28 January, 2021, (CRC Press), Chapter 9g.

Thank You!



NUVASIVE

For your **DIAMOND LEVEL*** support to San Diego Spine Foundation throughout the last year.

NuVasive has helped us reach our goals by providing support for Fellowships, the annual Visiting Professorship Conference, and Journal Club.



Thank you SeaSpine for your **PLATINUM LEVEL*** support to San Diego Spine Foundation throughout the last year.

SeaSpine has helped us reach our goals by providing support for Fellowships, the annual Visiting Professorship Conference, and the Journal Club.

Thank you to all the **BRONZE LEVEL*** companies who have provided funding to San Diego Spine Foundation throughout the last year in support of Education, Outreach and Research.

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Benefactors

As we celebrate 15 years of the San Diego Spine Foundation and make plans to provide the first grants from the Endowment Fund, we want to give special thanks to all the wonderful individuals who have donated to SDSF over the years. Each donation, regardless of the amount, has helped to build the SDSF Endowment in order to provide sustainable funding for research, education and outreach. We are happy to announce that the first call for grant applications will be issued in the spring of 2022. More information on that is available in the article on page 6 by Dr. Shahidi.

Friends and Family

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Katherine Victa
Corey Walker
Sam Ward
Jason Welsch
Dennis and Kathleen Wenger
Vinko Zlomislic

Over The Years



2012 San Diego City-Wide Spine Conference



SDSF / GSO Surgeons Greg Mundis, Jr. and Tony Rinella visit a post-operative patient (Monterey, MX 2017)



In the Beginning. Dr Akbarnia and Pat Kostial on research trip to visit James Weinstein and fellow at University of Iowa to review their non-operative treatment experience of severe Burst fractures.

Building Bridges Over The Years



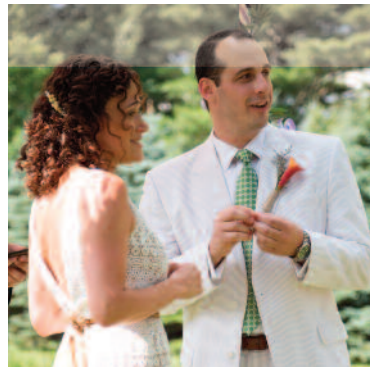
Dr. Akbarnia at Japanese Scoliosis Society, 2012



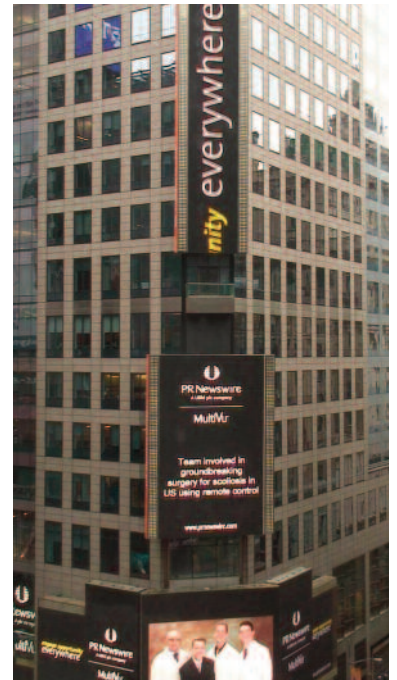
Marina - (Patient Story: 2015 Annual Report)



Dr. Kawakami and Dr. Bagheri Japan 2013



Past Research Coordinator Sarah Canale, MD married in 2014



Dr. Akbarnia, Burt Yaszay, MD, Gregory M. Mundis, Jr, MD, with Ed Roschak, CEO Ellipse Technologies, featured in Times Square in NYC in 2013



Pat Kostial bullriding
SRS 2009

SDSF Former Fellow Ed Nomoto, MD
and Bridget Mortell of GSO



Jack' - (Patient Story: 2017 Annual Report)



Kenna and Colbie W - (Patient Story: 2014 Annual Report)



Fellows Conference 2015



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



Scripps Team hosts SRS Traveling Fellows in surgery: Gregory Mundis, Jr, Robert Eastlack, Behrooz Akbarnia, Kota Watanabe, Ilharreborde Brice, Bangping Qian and Keith Luk



Noriaki Kawakami, MD with 2015 SRS Traveling Fellows: SRS Traveling Fellows: Burt Yaszay, MD, Patrick Cahill, MD, Stephan Parent MD, PhD and Behrooz A. Akbarnia, MD in Nagoya, Japan



Faculty from Bottom Left: Kamshad Raiszadeh, Donald Blaskiewicz, Choll Kim, Maneesh Bawa Faculty from Top Left: Peter O. Newton, Jay D. Turner, Behrooz A. Akbarnia, Gregory M. Mundis, Jr., Juan Uribe, James D. Bruffey, Todd J. Albert, Todd Allen and Robert K. Eastlack, along with former (1977) Fellow Nosrat Javidan 2017



SDSF Faculty Meeting



2018 SRS Traveling Fellows visit SDSF Faculty.
From Left: Kai Cao (China), Senior Fellow Francisco Perez-Grueso (Spain), Greg Mundis, Jr., Bob Eastlack (SDSF Faculty), Kariman Abelin-Genevous (France) and Zezhang Zhu (China)



Keely - (Patient Story: 2018 Annual Report)



West Coast Fellows Conference OnLine



Northern Lights Gala February 2020



Inaugural meeting of the San Diego Spine Initiative (SDSI) in January 2018. Spine surgeons and researchers from the greater San Diego area attended to kick off this project.



COVID - Bob Eastlack participates as faculty at SRS Annual Meeting, Sept. 2020

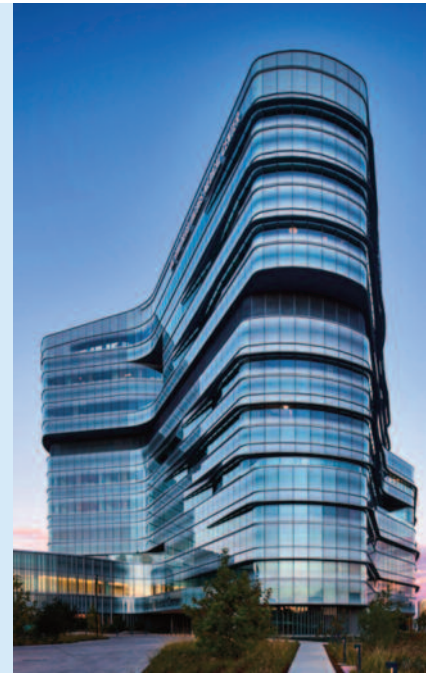
UCSD Endowment Update

We are happy to welcome Susan V. Bukata, M.D. as the new Chair of the Department of Orthopaedic Surgery at UCSD and to report progress with the Behrooz A. Akbarnia, MD and Nasrin A. Owsia, MD Endowment Chair in Spinal Surgery.

Efforts are underway to select the first recipient of this honor in 2022. A search committee has been convened and the plans are to review nominees and provide a letter of candidate endorsement to Dr. Bukata by June 2022. She will affirm the committee's choice to the UCSD Vice Chancellor and the first Akbarnia and Owsia Endowed Chair in Spinal Surgery will be announced.

This will be the first endowed chair in the UCSD Department of Orthopaedic Surgery.

As of December of 2021, the Endowment Fund had a value of more than \$2.5 million, making it possible to begin funding the Chair. We are so very grateful to all donors who have made this possible, and look forward to welcoming the new UCSD Behrooz A. Akbarnia, MD and Nasrin A. Owsia, MD Endowed Chair in Spinal Surgery during the upcoming year.



In the meantime,



our collaborative research



is already underway...

About the Cover

Our cover represents the explosion in spine advances over the past few years.

This image rendition is based on the remarkable work of Anne Cotrel . Those illustrations were provided as a courtesy of Anne Cotrel and the Cotrel Foundation. Anne graduated from the Ecole Supérieure Des Arts Décoratifs – Paris, and also holds a B.A. in Visual Art from Concordia University, Montreal, Quebec.

Anne has lived and worked in Canada, Italy and German speaking Switzerland. Her last personal exhibit took place at the Centre Culturel Zoroastre in Paris, April, 2014. The proceeds from Anne's art sales help to support the Cotrel Foundation.



Brian Greer

The SDSF would like to again thank Brian Greer, President of Golmage Media Services for his ongoing contributions including the development of our Annual Reports since 2013 and for our website development and management: www.sandiegospinefoundation.org.

Bridging the Gap Learn. Play. Give.

July 28-30, 2022
Omni La Costa Resort, Carlsbad, CA

Tentative Schedule:

Thursday, July 28	4:00-6:00 pm Case Discussions with Happy Hour
Friday, July 29	7:00 am-12:30 pm Case Based Scientific Session
	12:30-6:00 pm Golf Tournament
	6:00-7:30 pm Après Golf
	7:30-9:30 pm Guest Lecture and Dinner
Saturday, July 30	7:00-9:00 am Cycling: 1st Annual F.I.T.S. ride for GSO
	8:00-10:00 am Breakfast and non-CME presentations
	10:00 am-3:00 pm Case Based Scientific Session
	7:00 pm GSO/SDSF Gala

Keynote Speaker:

Christopher I. Shaffrey, MD
Scoliosis Research Society President

Committee:

Emeritus Chairman: Behrooz A. Akbarnia, MD
Co-Chairs: Gregory M. Mundis, Jr. MD and Robert K. Eastlack, MD
Directors: Michael P. Kelly, MD, Eric O. Klineberg, MD and Burt Yaszay, MD

A can't miss, updated version of the San Diego Spine Visiting Professorship, this event will incorporate the Visiting Professorship course, GSO/SDSF bi-annual gala, and sporting events for learning, fun, and networking.

San Diego Spine Foundation
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