



San Diego
Spine Foundation



2014 Annual Report
Academic Year
August 2013 – July 2014

fostering excellence in spinal education and research



Message from the President and Founder

Dear Friends and Family of the San Diego Spine Foundation:

2013–14 HAS BEEN A PIVOTAL ACADEMIC YEAR FOR OUR FOUNDATION.

January 2014 marked a formal conclusion to my clinical practice of almost 40 years, with 25 of those years in San Diego, allowing me more time to focus on my passion for my ongoing spine research and education. I cannot begin to thank you all for your continuing support over the past 25 years. I have been blessed to be able to turn my practice over to my associates Ramin Bagheri and Greg Mundis, Jr., two very capable and caring spine surgeons. As they begin a new chapter in their careers with Scripps, I look forward to seeing more collaboration between them and our dedicated faculty at Scripps Clinic, as well as watching their evolution over the years to keep pace with the ever-improving trends in spinal surgery.

I will continue to support all academic activities as we move to a new era for the Foundation.

In March 2014, another major milestone was reached with the FDA 510K clearance of the MAGEC rod (see our article on Pediatric Breakthroughs linked to SDSF on page 4 for details). This opened the door for very young children in the U.S. to have access to less invasive means of treating severe, progressive spine and chest wall deformities. The endeavor was successful due to collaborative efforts between the SDSF and Growing Spine Foundation research teams, Ellipse Technologies, SRS and POSNA Task Force on Pediatric Devices, and many others including the FDA, all of whom assisted in the journey through the regulatory pathways to this clearance. This clearance is a game changer for children with Early Onset Scoliosis and Thoracic Insufficiency Syndrome.

The July 2014 Visiting Professorship event and fundraiser was our first academic event combined with a fundraiser. It was extremely successful, thanks to all who contributed (see pages 22 and 23 for Donors and Sponsors). Brian Kwon, MD, PhD, FRCSC, was an exceptional Visiting Professor and speaker. We now look forward to 2015, when Scoliosis Research Society (SRS) President-Elect, David W. Polly, MD, will speak as our Visiting Professor on Friday, July 24th. We hope everyone will save this date and plan to participate.

Our striking 2013–14 Annual Report front cover is provided as a courtesy of Anne Cotrel and the Cotrel Foundation; we are grateful for their generous contribution to our report. Please see the Bio section on page 23 for details regarding this exceptional artwork.

The success of our Foundation is not due to any one person. We have been successful thanks to collaborative efforts between our sponsors, donors, and volunteers, including our Board of Directors and faculty, as well as our research, clinical and fellowship staff. I want to thank each and every person who helped in some way, allowing us to pursue our mission to improve the quality of our patients' lives. My special thanks go to the Go Image Web Design team, who donated their time for our website and for the preparation of this report.

It is an honor to serve as President of the San Diego Spine Foundation. Together, and with your support, we have and will continue to make a difference in the lives of patients with spinal disorders.

Behrooz A. Akbarnia, MD
President and Founder
San Diego Spine Foundation

San Diego Spine Foundation Board of Directors



Behrooz A. Akbarnia, M.D.
*President, Board of Directors
Director Emeritus and
Faculty Member,
Spine Fellowship Program*



Sarah E. Aghassi, Esq.
Member, Board of Directors



Robert K. Eastlack, M.D.
*Member, Board of Directors
Co-Director and
Faculty Member,
Spine Fellowship Program*



Patricia N. Kostial, R.N., B.S.N.
*Treasurer; Board of Directors
Executive Director
Administrator,
Spine Fellowship Program*



Gregory M. Mundis, Jr., M.D.
*Member, Board of Directors
Co-Director and
Faculty Member,
Spine Fellowship Program*

Additional Members of the Faculty



Ramin Bagheri, M.D.
*Faculty, San Diego Spine Fellowship
San Diego Center for Spinal Disorders,
San Diego, CA.*



Maneesh Bawa, M.D.
*Faculty, San Diego Spine Fellowship
San Diego Orthopaedic Associates Medical Group,
San Diego, CA.*



James D. Bruffey, M.D.
*Faculty, San Diego Spine Fellowship
Scripps Clinic,
La Jolla, CA.*



Donald Blaskiewicz, M.D.
*Faculty, San Diego Spine Fellowship
Neurosurgical Medical Clinic,
San Diego, CA.*

San Diego Combined Spine Fellowship Program Co-Directors' Report

It has been another great year for the San Diego Spine Fellowship program. Dr. Ali Bagheri and Dr. Drew Brown have completed their year with us and are off to start their careers in spine surgery. They've each completed exceptional work that advances our understanding of a new means of managing sagittal plane deformity.

We've maintained a strong and collaborative faculty for the program that includes our founder emeritus, Dr. Behrooz Akbarnia, who remains engaged in passing along his pearls of wisdom for our clinical and research efforts. Dr. Don Blaskiewicz continues to add a welcomed neurosurgical facet to our program, and we remain committed to providing one of the most extensive and broad exposures for our matriculating fellows. From early-onset scoliosis to adult complex deformity and minimally invasive techniques for spinal surgery, we continue to expose our fellows to traditional as well as advanced and novel means of treating spinal disorders.

As we start another academic term for fellowship training with Jay Turner, a neurosurgeon from Barrow Neurosurgical Institute, along with Edmund Choi and Ardalan Nourian, orthopaedic surgeons from Kingsbrook Jewish Medical Center and SUNY Downstate, we look forward to another enjoyable and productive year.

Robert K. Eastlack, M.D.

Gregory M. Mundis, Jr., M.D.

Breakthroughs

PEDIATRIC BREAKTHROUGH LINKED TO SDSF

2013-2014 has been a pivotal year for pediatric orthopaedic spine surgery and the San Diego Spine Foundation is proud of its connection to it all. It began in May 2013 with the 2 first ever MAGEC magnetic growing rod surgeries in the United States, performed by Behrooz Akbarnia, MD and his team, Gregory M. Mundis, Jr., MD and Burt Yaszay, MD at Rady Children's Hospital in San Diego. Afterward, these 2 young children have returned several times for outpatient non-invasive spinal lengthenings without surgery. For more information on this, visit our website to see "Anthony's Story" at www.sandiegospinefoundation.org/patientstories



Anthony W. (See Anthony's Story on website)

This work began in late 2007 with behind the scenes work by Dr. Akbarnia's team and Ellipse Technologies, the company behind the development of MAGEC. The data provided by this team on these cases, as well as an ongoing review of data from cases performed worldwide, were submitted to the FDA for review; the first case being done in Hong Kong in October 2009 following pre-clinical work in San Diego. The goal had been to obtain an FDA Humanitarian Device Exemption (HDE) to allow approved centers in the U.S. to perform this surgery as part of a large multicenter research study.

However in early 2014, the FDA cleared MAGEC with a full 510K clearance, opening the door for experienced U.S. pediatric spine deformity surgeons to use this technique earlier than anyone could have dreamed of. We can't thank the FDA enough for their vision and understanding regarding the unique unmet needs of

young children with severe spinal and chest wall deformities at risk for thoracic insufficiency syndrome, thus allowing these children to have the best chance of survival and quality of life.

Shortly after this announcement, MAGEC was presented to the American Academy of Orthopedic Surgeons (AAOS) Annual Meeting at its Kids Forum on March 13th, 2014. This presentation helped to bring national attention to the positive changes aiding U.S. pediatric spine surgeons as they treat complex spinal deformities in very young patients.

Since the FDA clearance on February 27, 2014, over 100 MAGEC cases have been performed in the U.S. with over 1500 cases having been performed worldwide since 2009. Dr. Akbarnia is now working with Ellipse to ensure each surgeon is given every opportunity to train on the correct use of this new technology.

The San Diego Spine Foundation is proud to have provided partial funding and staffing for research related to MAGEC. It is our hope that this research will continue well into the future. Innovation that leads to improvements in patient care must always be a priority.



Dr. Akbarnia and his team Burt Yaszay, MD, and Gregory M. Mundis, Jr, MD, along with Ed Roschak, CEO and President of Ellipse Technologies, featured in Times Square in NYC in 2013

INNOVATIONS FOR ADULT AND AGING SPINE DEFORMITY

Innovations in surgical techniques have lagged behind for the very young, and, for our older patients. Those considered too young or too old were left to face diminishing quality of life, often filled with pain and/or dysfunction.

The San Diego Spine Foundation is proud to have faculty who are both educators and researchers. Please see our feature article and story regarding innovations for our very young children in this annual report. This article addresses the continued innovations in adult and aging patients with spine deformity.

Our related feature “Chuck’s Story” covers the life of one such patient who has benefitted from this research and change of treatment philosophy. Not too long ago, the standard of care for addressing severe adult spine deformity was a more invasive open anterior spine surgery, which allowed the surgeon to release the stiffness of a severe curve and provide a way to place cages and bone graft in the front of the spine to promote better quality spinal fusion. Then, many days to a week later during the same hospital stay, the patient would undergo a complex multilevel posterior spinal fusion and instrumentation. The combined hours for both surgeries were often greater than 16 hours. The recovery from 2 major procedures took many months and the hospitalization alone could exceed a month if anticipated medical problems complicated the patient’s recovery.

Thanks to a collaborative effort of our surgeon members along with other members of the International Spine Study Group, research has led to new and improved ways to address adult and aging spinal deformity. This, along with the emerging techniques such as ACR (Anterior Column Realignment) developed in San Diego by our faculty surgeons, has brightened the future for patients considering major spine deformity surgery and opened a door for those previously considered too old.

ACR is thus far showing promising results in eliminating the large open anterior surgery as well as the complex posterior PSO (Pedicule subtraction osteotomy) procedures, which adds time and complication risks. ACR is performed as a minimally invasive procedure. Our patient Chuck was the first to have 5 levels performed, then 3 short days later he returned for his posterior surgery. Though Chuck did require a more extensive



Coach Chuck F. (See Chuck's story, next page)

open posterior spinal fusion surgery, many patients are candidates for a minimally invasive percutaneous posterior surgery instead, further shortening the length of recovery and hopefully lessening complications and length of stay in the hospital in the process.

Research is ongoing now to collect data from Chuck and similar patients when they return for their routine follow-up. We can't thank Chuck and all our patients enough for agreeing to allow their data to be studied. The proof is in the pudding, so we will continue to collect and analyze this data. We look forward to reporting our results, regardless of the outcome, as we continue to strive toward improving our patient's quality of life.

No one wants to stop being active and healthy, especially not me.

My name is Chuck and I'm writing my story to provide hope and encouragement to individuals suffering from debilitating spinal deformities. I've had the good fortune of being healthy and active all my life. During my career, I served as a coach and later as Athletic Director for a Los Angeles area community college for greater than 40 years. Fitness and sports are my life and I hoped to be a role model for the young men and women who were in my program. I exercised every day at least 2 hours each day.

Chuck's Story

I continued to do this even when I started noticing my low back was hurting and my legs were painful. I believed that you need to push through this and I did. Despite my high level of fitness though, I noticed my back pain was steadily worsening and my posture was falling forward as well as off to the side. I came to realize over time I couldn't stand up straight anymore. Finally, after ignoring the symptoms until I couldn't anymore, I sought medical care. Again, I felt I could do therapy, chiropractic, have some injections and I'd be back on track.

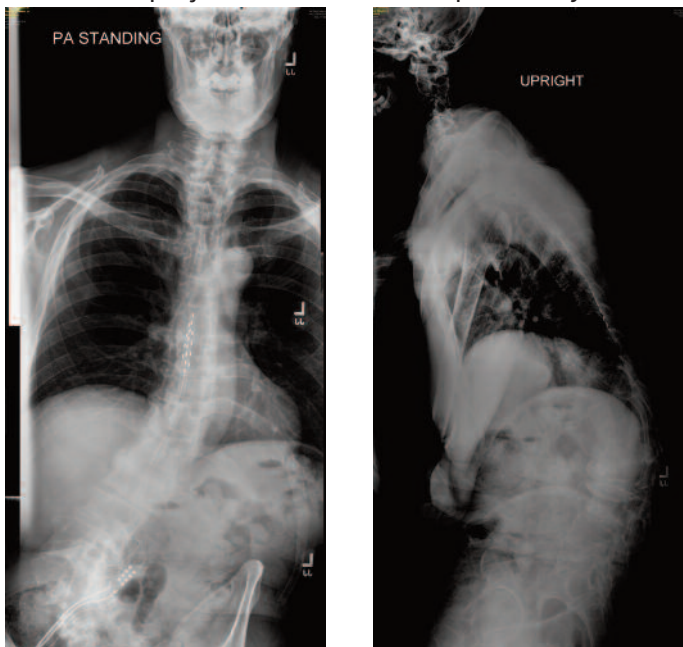
What I came to understand later is that I had a structural spinal problem. In other words, my spine had twisted and was stuck in a position that caused significant pain and forced me to stop certain activities I had enjoyed all my life. I refused to give up exercising, but I couldn't walk, jog or run at all anymore. The problem worsened quickly and the pain became so significant that it forced me to retire several years earlier than planned, well before projects I had wanted to personally

complete could be finished. Constant pain gets to you, it affects everything you do and it was affecting my ability to do my job to my satisfaction.

After trying and failing virtually all non-surgical treatment methods, I finally began gathering information from surgeons, and I had surgery scheduled already when I came to meet Dr. Donald Blaskiewicz and Dr. Gregory Mundis, Jr. These guys were special. I had done my homework, so I knew they were capable of treating my problem, but, I also sensed they really cared about me as an individual and my goals in life. They had frank conversations with me about treating my problem, which was called *severe kyphoscoliosis with sagittal imbalance and spinal stenosis*. In short, my spine was completely out of balance and not curving the way it was designed. I stood pitched forward, and off to the side, which can cause significant back pain, and it did. They didn't make any guarantees and warned me the surgery was complex and the complication rate can be high at my age. I just knew that my quality of life was miserable and I didn't want to live like this, so I was willing to take the risks and see it through to completion. I had much in life I still wanted to do.

I had to have 2 surgeries, each very complex, and as a result were spaced 3 days apart. My first surgery, I was told, was a first ever minimally invasive reconstruction called an ACR (Anterior Column Reconstruction) to span 5 disc spaces. This was a major part of the surgeons rebuilding my spine. It went as expected and I returned to the operating room for the stabilizing portion of the procedure 3 days later, spanning 17 levels of my spine with screws for anchors and rods to hold my spine in its new position until it healed permanently that way.

Dr.'s Blaskiewicz and Mundis greeted my family afterwards. My children said the doctors were exhausted and



Chuck F.'s pre-surgery x-rays

drenched, but they took the time and sat down for 20-30 minutes explaining what they did and answering all their questions. My kids to this day ask about them and regard them highly.

I'll be honest, the surgical recovery was tough. Despite the great methods for receiving pain medication, what they did in surgery hurt and I was in a great deal of pain the first few weeks. Anyone preparing for this type of surgery needs to know this and mentally prepare for it; I think that would help. I was blessed to have my children by my side in the hospital and for the first few weeks at home. After both surgeries, I started from ground zero. I couldn't lift a foot an eighth of an inch off the floor and it took sheer will and determination to do the work expected of me, and I did. My family was there at first,



Chuck F.'s post-surgery x-rays

helping me along. I quickly outgrew the need for home therapists and did the exercises myself. Overtime, the pain became less and less. Of course, they warn you that there will be good days and bad. You have a good day, do more than you probably should, and you pay for it the next day. I experienced many of those. Over time though, this subsided as well.

Now, I'm pleased to say I'm pain free. I stand straight again, having regained virtually all of my 6'2" height

that I had lost due to my spine problem. I'm back to my 2 hour a day exercise sessions and I've even returned to walking and jogging. I honestly never thought I'd do that again.

I had a successful outcome and I must thank the doctors for having the skill and the compassion to see me and my family through some pretty dark days. They give you a lot of confidence to know you can do it. But, as I've known all my life from being an Athletic Director, no one person can do it alone. It takes a team. I had great surgeons and great children to help me. But I'm part of the team as well. I couldn't sit passively by and let everyone do it for me. I did my homework before ever having surgery. I researched my problem, found the best people to do the job, and then afterward, I had to take charge of my recovery. I was determined to see it through to the end. Yes, it hurt like crazy, but I recovered, and I'm back. I'm back to my life, free of back pain and back to my lifestyle. I couldn't be more pleased.

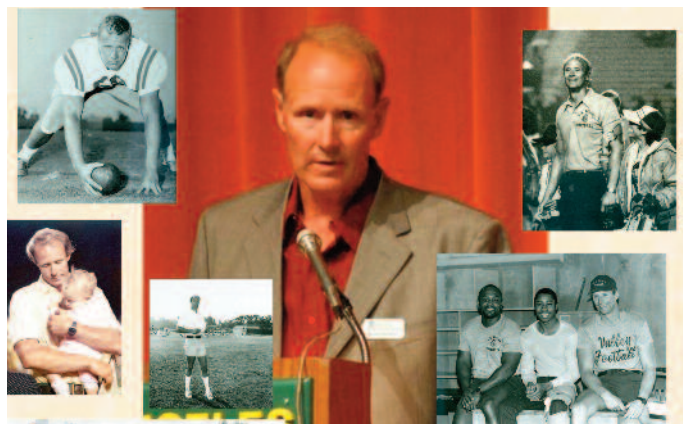
So, what are my recommendations to anyone considering this type of surgery? I always tell people considering major spinal surgery that there are three things to consider:

- Do your research and find the very best surgeon or surgeons for your type of problem.
- Be willing to put in the work physically to come back
- Have support when you come home from the hospital (for at least four weeks)

These are all critical to achieve a successful outcome.

Thanks to the San Diego Spine Foundation for giving me the opportunity to share my story and hopefully help others who read it.

Chuck F.



Coach Chuck F. After Surgery Accepting the Outstanding Athletic Director Award for 2014 (L.A. Valley College Athletic Hall of Fame)

Our Events

Spine Conferences

Weekly Fellow's Conference curriculum includes lectures and case presentations. Attendance is open to community surgeons, international and U.S. visiting surgeons as well as fellows, faculty and staff.



International Visitor Dr. Ajay Kothari presents cases at Weekly Conference

Journal Club Meetings

Monthly meetings hosted by local industry or faculty provides local spine surgeons, fellows and staff opportunities to review newly published and time honored research articles.



Faculty, fellows and staff at Journal Club meeting hosted at Dr. Behrooz Akbarnia's home



Faculty, staff and visitor Carl Maguire, MD



Journal Club discussion among faculty, fellows and academic staff

SDSF International Visiting Surgeons



Yoon Ha, MD, PhD of Korea with Gregory Mundis, Jr. MD in 2014



Valmor Artur Patricio, Jr, MD of Brazil and Mehmet Balioglu, MD of Turkey with Gregory Mundis, Jr, MD and Behrooz Akbarnia, MD in 2014

2014 Visiting Professor's Annual Meeting

Friday, July 25, 2014

With Bob Eastlack as our Program Chair, our 2014 annual meeting was a big success. Brian K. Kwon, MD, PhD, FRCS C honored us as our 2014 Visiting Professor. His day and evening talks included "Translational Perspectives On The Timing Of Surgery For Acute Spinal Cord Injury" and "Stem Cells and the Cure for Spinal Cord Injury". Attendance included area San Diego spine surgeons, Navy residents and faculty, area spine care professionals and researchers.



Visiting Professor Brian Kwon, MD, PHD, FRCS C with Behrooz Akbarnia, MD, Robert Eastlack, MD (Program Chair) and Gregory M. Mundis, Jr., MD

San Diego Spine Foundation Visiting Professor Fundraiser Gala

Our foundation's first Gala was memorable with Brian K. Kwon as its keynote speaker and Rear Admiral Bruce L. Gillingham, MD as an honored guest of Behrooz Akbarnia. Many friends and colleagues attended and contributed to the foundation's endowment fund, which will help fund research and education into the future.



Gala guests: Rear Admiral Bruce Gillingham, Cathy Newton, Peter Newton, MD, Behrooz Akbarnia, MD and Henry Chambers, MD



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)



Gala guests: Behrooz Akbarnia, MD, Ramin Bagheri, MD, Ethel and Bruce Haslinger, Marilyn Alm, Vaale Gafori, MD and Lesley Mundis



Visiting Professor Brian Kwon, MD, PhD, FRCS C speaks at Annual Meeting



Gala guests: Justin Renaudin, MD, Ethel and Bruce Haslinger, Carl Maguire, MD and Margaret Sheehan

“YOU’RE IN THE RIGHT PLACE.” These are the first words we heard from Dr. Akbarnia and words we will never forget. They immediately lifted a huge weight off of our shoulders and gave us hope for our daughter after two years of uncertainty.



Behrooz A. Akbarnia, MD, Shelby and Colbie W. with Gregory M. Mundis, Jr, MD

My husband, Geoff, and I are the proud parents of 6-year-old twin girls, Colbie and Kenna. Today, they look and act like any other First Grader, so much so no one would ever guess that their lives began 15 weeks prematurely due to unforeseen pregnancy complications. Colbie weighed 1 pound 6 ounces and measured 11.5 inches long at birth, while Kenna weighed in at 1 pound 5 ounces and measured 12 inches long.

Our new daughters spent the next 113 days fighting for their lives in the NICU. Kenna and Colbie each faced their own struggles during that time, but both improved and gained weight slowly. Thankfully, neither had any major medical issues while in the NICU, except for one specific problem with Colbie. At roughly 12 weeks of age, the physicians in the NICU noticed an abnormal curve in between Colbie’s shoulder blades. She was x-rayed and found to have a congenital defect causing kyphosis, greatly accentuating the normal curve of her spine. Colbie was monitored carefully by Las Vegas area pediatric orthopedist, Dr. Jonathan Camp. Her problem seemed stable until an x-ray on March 25, 2010 showed an increase from 25° to 40° in 6 short months. During this same 6-month time span, Colbie had finally started walking, only to reverse back to crawling for a short period. Later attempts at walking were difficult for her. She struggled with endurance and walked off balance. Being new parents, we thought she was just too small to carry her weight correctly or wasn’t quite strong enough just yet. However, after Dr. Camp’s discovery, an MRI, CT scan, and a second opinion were obtained and all roads led us to Dr. Behrooz Akbarnia in San Diego.

Colbie’s Story

Dr. Akbarnia is an expert in pediatric spinal deformities in very young children and was one of only a few spine surgeons in the U.S. capable of saving our daughters’ spine. Both Dr. Camp and the other local orthopedist were very concerned Colbie was at severe risk for a spinal cord injury if she did not seek immediate attention.

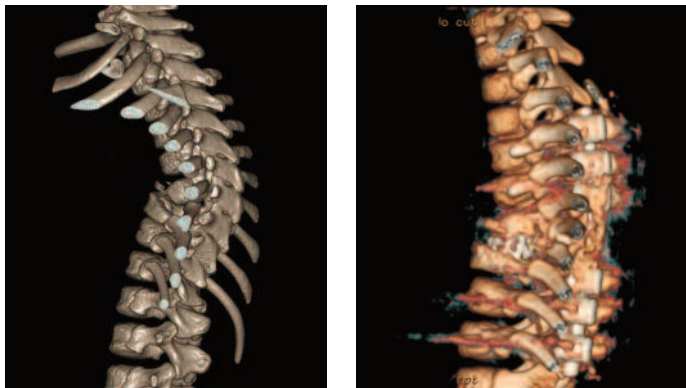
The 5-hour drive to San Diego was an unusually long and uneasy trip for us. Our thoughts were consumed with uncertainty and horror stories of spinal fusions gone wrong. We had a plethora of questions and hundreds of concerns about our daughters’ future. After reviewing Colbie’s records in his office, Dr. Akbarnia walked into our room, took my hand and said, “You’re in the right place.” He, and his surgical team, including Gregory M. Mundis, Jr., MD and their fellow, “Dr. Sam” Schroerlucke, spent the next hour and a half explaining in detail Colbie’s unique spinal situation and their intricate surgical strategy to Geoff and I. Leaving the office, we were still extremely nervous about the upcoming surgery, but meeting Dr. Akbarnia’s team reaffirmed our decision to seek their expertise and provided us the absolute best hope to save our daughter’s freedom of movement.

The doctors explained to us that Colbie’s spine didn’t develop correctly and she was missing 2 important blocks of bone in the front of the spine needed to bear the weight of the upper body. Without these blocks (vertebral bodies), the spine can collapse, thus potentially leading to paralysis. In Colbie’s case, her spine fell forward, dislocating the upper and lower half of her spine and putting direct pressure on her spinal cord. Her difficulty with walking was a sign of neurological injury and weakness, and without urgent surgical treatment, she would unquestionably become paralyzed.

It was recommended she have surgery to remove the pressure from her spinal cord and correct the physical deformity causing the sharp angle in her spine (posterior decompression, multilevel vertebral column resection (VCR), posterior spinal fusion and instrumentation with multilevel posterior osteotomies). The surgery was very complex and the risks and possible complications that were explained to us were great, but we knew we had no choice but to trust this surgical team with our daughter’s life.

Four short weeks after the original diagnosis in Las Vegas, and two weeks after our initial consultation with Dr. Akbarnia, we drove back to San Diego for Colbie’s

surgery. In retrospect, I'm not sure what was worse, the 8 pain-staking hours we spent in the waiting room during Colbie's surgery, or the 113 long days our girls spent in the NICU. Words cannot describe the relief we felt when we saw Dr. Akbarnia walk in eating ice cream, then tell us how Colbie's surgery went. We knew things had to have gone well!! Despite the extremely complex surgery, he explained that they had achieved the best possible outcome and that only one surgical incision had been necessary instead of the two he originally expected. "From a technical standpoint, her surgery went perfect," said Dr. "Barney" (as Colbie called him). However, based on the spinal monitoring during surgery, they did anticipate some weakness with her left leg, but expected that this would improve over time.



CT Scan reconstruction shows Colbie's dislocated and collapsed spine

Even though we were elated that her surgery went splendidly, we knew that she would have a long road to recovery. In the days and weeks to follow, she had significant pain. As parents, the recovery was hard enough to endure, but due to her young age, it was even more excruciating because she couldn't fully communicate her needs to us. One major obstacle post-surgery was that Colbie could not walk. She was old enough to know that she should be walking like her twin sister, so she became extremely frustrated when she tried and nothing happened. One day Colbie broke my heart when she looked at me and said, "I'm stuck Mama, I'm stuck." However, 5 weeks after her spinal procedure, she taught herself to walk for the second time! After she took a few wobbly steps, she got a huge grin on her face, started squealing with excitement and even attempted to run!

Throughout the entire discovery, surgery, and recovery process, Geoff and I had to deal with tremendous health insurance issues for Colbie. Like many American families, we are required to see physicians who are in network, or face huge financial penalties. We learned patience, determination, and ultimately we overcame these challenges.

Would we do this again, knowing what we know now? In a heartbeat! Despite the hardships and obstacles we faced as a family, we grew stronger from the experience. We have fond memories of Dr. "Barney," Dr. Mundis and "Dr. Sam", as well as countless others who went above and beyond to get her surgery scheduled so quickly and work with us. We are forever grateful to Dr. Akbarnia and his associates for giving our daughter the gift of mobility and leading a "normal" life.

Finally, it is Geoff's and my wish to share our pearls of wisdom from our experience. First of all, BE YOUR CHILD'S ADVOCATE!! Know that it is okay to ask questions, to disagree with providers and insurance plans, and to challenge their findings. It's okay to request additional opinions, especially if you are getting differing opinions. When it comes to your children, you have to do what is best for them. Also, life is unpredictable so NEVER TAKE THOSE YOU LOVE FOR GRANTED. If you have a strong system of support from family and friends, embrace it and count on it in times of need. Each day together is most certainly a gift. Hug your children a little closer after reading this story. Thank your child's doctor, teacher, or therapist the next time you see them. Let them know how important they are to your child's life. Finally, DON'T EVER GIVE UP! If you don't fight for your child, then who will?

We would like to sincerely thank Dr. Akbarnia and Dr. Mundis for being the lights at the end of our tunnel, and for affording our daughter the gift of movement free from pain, disfigurement and restrictions. Additionally, we would like to thank the San Diego Spine Foundation for allowing us to share Colbie's story with you. We hope it brings you peace and promise for your situation.

Shelby and Geoff W.

Proud Parents of Colbie and Kenna W.

The full story can be viewed on our website at www.sandiegospinefoundation.org/patientstories



Kenna and Colbie W in 2014

Visiting Fellows 2013-14

Our international visiting fellowship program has hit its stride with growing popularity and requests for observerships. Our 2013-14 academic year included the following visitors:

- Mariano Leichner, MD (Argentina)
November 1-15, 2013
- Alexandre Borba, MD (Brazil) February 3 – 28, 2014
- Mohammadreza Chehrassan, MD (Italy) MD
March 1 – 31, 2014
- Yoon Ha, MD (South Korea) May 2014
- Valmor Artur Patricio, Jr., MD (Brazil)
July 15 – Sept 2nd, 2014
- Ajay R. Kothari, MD (Scoliosis Research Society
International Surgeon Visitor - India)
July 21 – August 8th, 2014
- Mehmet Balioglu, MD (Scoliosis Research Society
International Surgeon Visitor - Turkey)
August 8 – 30, 2014
- Richard Bwana Ombachi, MD (Kenya)
August 19-20, 2014
- Oliver Soren Otieno, MD (Kenya) August 19-20-2014



Dr. Behrooz Akbarnia and SRS Visiting Surgeon Dr. Ajay Kothari



Drs. Donald Blaskiewicz and Gregory Mundis, Jr. with Kenyan visiting surgeons Dr. Richard Ombachi and Dr. Oliver Otieno, along with Sharp Ortho-Neuro Administrator Mary Ellington

2014 Graduating Fellows



Ali Bagheri, MD
Department of Orthopedic Surgery
Akron General Medical Center
Akron, Ohio



Drew Brown IV, M.D.
Complex, Cervical, and Minimally
Invasive Spine Surgery
Florida Orthopaedic Specialists
Port St. Lucie, Florida

2014-2015 Clinical Fellows



Edmund H. Choi, MD
Kingsbrook Medical Center
New York Downtown Hospital
Weill Cornell Affiliate
Brooklyn, New York
2009-2014



Ardalan A. Nourian, MD
SUNY Downstate
Department of Orthopedics
Brooklyn, New York
2009-2014



Jay D. Turner, MD, PhD
Barrow Neurological Institute
Phoenix, Arizona
2009-2016

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, Protosaltis, 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

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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

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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

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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

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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

Glantzbecker, 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, Protopsaltis 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, Protopsaltis 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, Protopsaltis 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, Protopsaltis 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

21st 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

7th 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 11th 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



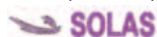
7th International Congress Of Early Onset
Scoliosis And Growing Spine (ICEOS)
San Diego, California, Nov. 21-22, 2013



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



The Future

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)*

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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.

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2013-14 JOURNAL CLUB HOSTS

August 2013	DePuy Synthes
September 2013	Pioneer Surgical
October 2013	Stryker Spine
November 2013	Globus Medical
January 2014	Medtronic
February 2014	DePuy Synthes
March 2014	Globus Medical
April 2014	Behrooz A. Akbarnia, MD
May 2014	Compass Spine
June 2014	Gregory M. Mundis, Jr, MD

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The San Diego Spine Foundation would like to express its appreciation to Mr. Brian Greer, President of Golmage Media Services Inc. for his generous contribution of the development of both our 2013-2014 Annual Report and our website: www.sandiegospinefoundation.org.

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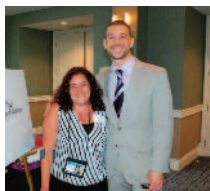
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The SDSF would like to thank Jennifer Rushall Photography for donating her time and talent to provide the photos taken for our 2014 Visiting Professors event.

Photo: Gregory Mundis, Jr. MD and Jennifer Rushall

About the Cover

The cover is provided as a courtesy of Anne Cotrel and the Cotrel Foundation. The drawing is part a set of sketches on spinal deviation made for the Centennial of the Institut Calot, in 2000.

All are red chalk drawings. This technique was the one used for anatomical studies during the Renaissance (Leonardo da Vinci) The softness and nuances inherent to this technique enabled to display the beauty and harmony of the bodies, way beyond the deformity caused by the disease.

Anne Cotrel:

Ecole Supérieure Des Arts Décoratifs - Paris. B.A. in Visual Art, Concordia University, Montréal. Annie 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.





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Spine Foundation

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