**Curriculum Vitae**

**Sumeet Garg, MD**

Updated November 2020

**1.** **BIOGRAPHICAL SKETCH**

**Associate Professor**, Department of Orthopaedics - 2010-Present

University of Colorado School of Medicine and

Children’s Hospital Colorado

13123 E 16th Ave., B60

Aurora, CO 80045 Ph: (720) 777-3253 Fax: (720) 777-7268

Email: sumeet.garg@childrenscolorado.org

Wife: Molly Lahlein Garg (2007)

Children: Nayan Robert Garg (2009), Talan Joseph Garg (2012)

**2.** **EDUCATION**

Harvard University, Cambridge, MA 1999 B.S. Biology (magna cum laude)

Harvard Medical School, Boston, MA 2004 M.D. Medical Degree (cum laude)

2004-2009 **Orthopedic Surgery Residency**

Washington University, St. Louis, MO

2008-2009 **Chief Resident in Orthopedic Surgery**

Washington University, St. Louis, MO

2009-2010 **Dorothy and Bryant Edwards Fellowship in Pediatric Orthopedics and Scoliosis**

Texas Scottish Rite Hospital for Children, Dallas, TX

**3. ACADEMIC APPOINTMENTS**

2010- Present Pediatric Orthopedic Surgery, Children’s Hospital Colorado, Aurora, CO

2010- 2016 Assistant Professor, Dept of Orthopedics, University of Colorado School of Medicine

2016- Present Associate Professor, Dept of Orthopedics, University of Colorado School of Medicine

**4. HOSPITAL, GOVERNMENT OR OTHER PROFESSIONAL POSITIONS**

1997 Clinical Research Intern, University of Rochester Medical Center, Rochester, NY

1998-1999 Laboratory Research Intern, Children’s Hospital, Boston MA

1999-2000 Clinical Research Project, Dana Farber Cancer Institute/UMASS Biologic Laboratories

 Boston/Jamaica Plain, MA

2002-2003 Clinical Research Fellow, Children’s Hospital of Philadelphia, Philadelphia, PA

**5.** **HONORS/AWARDS**

1996 Detur Prize – Harvard College

1996 John Harvard Scholarship

1997 John Harvard Scholarship

1998 John Harvard Scholarship

1998 Pediatric AIDS Foundation Student-Intern Award

2000 Paul & Daisy Soros Fellowship for New Americans

2002 Doris Duke Charitable Foundation Clinical Research Fellowship

2004 Best Poster, Tumor Classification. American Academy of Orthopaedic Surgeons Annual Meeting

2008 AOA-OREF-Zimmer Resident Leadership Forum Recipient

2010 Eastern Orthopaedic Association Resident/Fellow Paper Award

2015 Best Clinical Paper, Nominee. Pediatric Orthopaedic Society of North America Annual Meeting

2016 Best Clinical Paper, Nominee, Pediatric Orthopaedic Society of North America Annual Meeting

2016 Excellence in Quality and Patient Safety Award, Children’s Hospital Colorado Medical Staff - Reducing the incidence of Collapse, Resuscitation, and Sudden Heightening of Care (“CRASH Care”) in spine fusion patients following OR to ICU transfer

2018 Honorable Mention, Abstract Award. Society for the Advancement of Blood Management.

2019 February Provider of the Month, Children’s Hospital Colorado Medical Staff

2020 Best Clinical Paper, Winner, Pediatric Orthopaedic Society of North America Annual Meeting

2020 Best Clinical Paper, Nominee, Pediatric Orthopaedic Society of North America Annual Meeting

**6. MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

2012-Present SRS – Scoliosis Research Society – **Candidate Member**

2012-Present Colorado Orthopaedic Society – **Active Member**

2010-Present POSNA –Pediatric Orthopaedic Society of North America – **Active Member**

2010-Present AAOS – American Academy of Orthopaedic Surgeons – **Active Member**

2010-Present J Albert Key Society – **Active Member**

2019-Present Harms Study Group – Setting Scoliosis Straight Foundation – **Active Member**

2010-Present Pediatric Spine Study Group – Children’s Spine Foundation/Growing Spine Foundation – **Principal Member**

**7.** **MAJOR COMMITTEE AND SERVICE RESPONSIBILITIES**

**University Committees**

1997-1999 Harvard University. Phillips Brooks House Association, Cabinet Member

2002-2003 Liaison Committee on Medical Education. Institutional Self-Study Committee on General Facilities/Library/Information Technology. Harvard Medical School

2019-present University of Colorado Department of Orthopedics Quality Committee, Member

**Hospital Committees**

2010-2015 Blood Utilization Review Team, Children’s Hospital Colorado

2010-Present Original Target Zero Infection Task Force, Children’s Hospital Colorado

2011-2013 Medical Staff Board, Member, Children’s Hospital Colorado

2010-2019 Orthopaedics Institute Quality Committee, Director, Children’s Hospital Colorado

2011-2013 Perioperative Services Quality Committee, Member, Children’s Hospital Colorado

2019-Present Perioperative Services Quality Committee, Member, Children’s Hospital Colorado

2013-Present Center for Children’s Surgery, Research Committee, Member, Children’s Hospital Colorado

2019-Present Director of Quality and Safety, Department of Orthopedics, Children’s Hospital Colorado

**International Organization Committees**

2008-2009 Resident Liaison, American Academy of Orthopaedic Surgeons

2011-2013 Educational Courses Committee, Member, Pediatric Orthopaedic Society of North America

2013-2014 Advocacy Committee, Member, Pediatric Orthopaedic Society of North America

2012-2014 Safety Committee, QSVI, Member, Pediatric Orthopaedic Society of North America

2012-2013 E Text Committee, Member, Scoliosis Research Society

2012-2013 Growing Spine Committee, Member, Scoliosis Research Society

2013-2014 CME Committee, Member, Scoliosis Research Society

2016-2017 Website Committee, Member, Scoliosis Research Society

2014-present US News and World Report Pediatric Orthopaedics Working Group

2016-2018 Evidence Based Medicine Committee, Member, Pediatric Orthopaedic Society of North America

2017-present Growing Spine Committee, Member, Scoliosis Research Society

2018-2020 E-Editorial Committee, Member, Pediatric Orthopaedic Society of North America

2019-2020 Growing Spine Committee, Chair-Elect, Scoliosis Research Society

2020-2021 Growing Spine Committee, Chair, Scoliosis Research Society

2020-present Resident Communications Committee, Member, Pediatric Orthopaedic Society of North America

**Community Service**

1996-2000 Mission Hill After School Program, Director/Coordinator, MHASP- Phillips Brooks House Association, Cambridge, MA

2020 Colorado Rapids Youth Soccer – Volunteer Head Coach U9 Boys

**8. LICENSURE AND BOARD CERTIFICATION EXAMINATIONS**

2010- Present State of Colorado Department of Regulations, Division of Registration

2009 American Board of Orthopaedic Surgery Part I

2012 American Board of Orthopaedic Surgery Part II

American Board of Orthopaedic Surgery: Diplomate effective 7/24/2012

**9. REVIEW AND REFEREE WORK**

2015-present Reviewer, Journal of American Academy of Orthopaedic Surgeons

2016-present Abstract Reviewer, POSNA Annual Meeting

2016-present Reviewer, Journal of Pediatric Orthopaedics

2016-present Reviewer, Journal of Pediatric Surgery

2017-present Reviewer, Spine Deformity

2018-present Reveiwer, Journal of Children’s Orthopaedics

2018-present Abstract Reviewer, International Congress on Early Onset Scoliosis

2018-present Reviewer, Journal of Orthopaedic Trauma

2019-present Reviewer, Scoliosis Research Society Annual Meeting

2019-preseent Reviewer, International Meeting on Advanced Spine Techniques

**10. VISITING PROFESSORSHIP**

**11**. **INVITED LECTURES, PRESENTATIONS**

**Invited Lectures and Presentations**

2012 Scoliosis Diagnosis, Treatment, and Surgical Procedures, Hanger Symposium September 20, 2012

2013 Back Pain and Scoliosis in Children and Adolescents, Wyoming Medical Society Annual Meeting, Laramie, WY, June 8, 2013

2013 Pediatric Spine Trauma, Orthopaedic Surgery Educational Conference, Michigan State University College of Osteopathic Medicine Statewide Campus System, Troy, MI, September 11, 2013

2013 Early Onset Scoliosis, Orthopaedic Surgery Educational Conference, Michigan State University College of Osteopathic Medicine Statewide Campus System, Troy, MI, September 11, 2013

2016 Decision making and surgical techniques for neuromuscular scoliosis. Children’s Hospital Los Angeles, January 27, 2016

2018 Speaker and Panelist. Power Over Scoliosis. Setting Scoliosis Straight Foundation. Rady Children’s Hospital. San Diego, CA. June 2, 2018

2019 Complications in the management of idiopathic scoliosis. American Osteopathic Academy of Orthopedics Annual Fall Meeting. Colorado Springs, CO. October 25, 2019.

2019 Spinal trauma. Advanced Care of the Young Athlete Symposium. Aurora, CO. November 5, 2019

2020 Collaborative Case Review. Children’s Hospital Colorado. Aurora, CO. February 10, 2020

2020 Pediatric Spine Trauma, Orthopaedic Surgery Educational Conference, Michigan State University College of Osteopathic Medicine Statewide Campus System, Troy, MI, September 9, 2020

**12**. **TEACHING RECORD**

**Local**

2009 Garg S**.** Neurofibromatosis. Texas Scottish Rite Hospital for Children, Pediatric Orthopaedic Conference. Dallas, TX

2010 Casting/Splinting Workshop, Orthopaedics for the Primary Care Provider, The Children’s Hospital, Aurora, CO

2010 Spine Evaluation, Orthopaedics for the Primary Care Provider, The Children’s Hospital, Aurora, CO

2010 Newborn Orthopedic Issues, NICU Fellows Conference, The Children’s Hospital, Aurora, CO October 6, 2010

2010 Back Pain and Scoliosis in Children and Adolescents, Parker Adventist Hospital, Parker, CO, November 16, 2010

2011 Back Pain and Scoliosis in Children and Adolescents, Exempla Lutheran Medical Center, Wheat Ridge, CO, January 11, 2011

2011 Back Pain and Scoliosis in Children and Adolescents, Littleton Adventist Hospital, Littleton, CO March 15, 2011

2011 Huh J, Baulesh DM, Judkins T, **Garg S**, Miller NH, Erickson MA. The Role of Serial Casting in Early Onset Scoliosis (EOS). Children’s Orthopaedics Day, The Children’s Hospital, Aurora, CO, April 22, 2011.

2011 Spine Evaluation, Orthopaedics for the Primary Care Provider, The Children’s Hospital, Aurora, CO

2011 Pediatric Musculoskeletal Infection, Orthopaedic Resident Lecture, University of Colorado, Denver, CO, June 29, 2011

2011 Early Onset Scoliosis, Orthopaedic Resident Lecture, University of Colorado, Denver, CO, September 21, 2011

2011 Early Onset Scoliosis, Neurosurgical Department Conference, University of Colorado, Denver, CO September 27, 2011

2011 Spine Evaluation, Orthopaedics for the Primary Care Provider, The Children’s Hospital, Aurora, CO

2012 Evaluation and Management of Spine Trauma in Children, MTLS Lecture Series, Children’s Hospital Colorado, Aurora CO February 27, 2012

2013 Adolescent Idiopathic Scoliosis, Orthopaedic Resident Lecture, University of Colorado, Denver, CO, May 15, 2013

2013 Scoliosis and Back Pain in Adolescents, Children’s Hospital Colorado at St Joseph’s Pediatric CME, Denver, CO, August 21, 2013

2013 Spinal Fusion Education Session, Children’s Hospital Colorado Hospitalist Lecture Series, Aurora, CO, September 4, 2013

2013 Neuromuscular Scoliosis, Orthopaedic Resident Lecture, University of Colorado, Denver, CO, October 30, 2013

2013 Congenital Scoliosis, Orthopaedics Resident Lecture, University of Colorado, Denver, CO, October 30, 2013

2013 Casting and Splinting Workshop, Orthopedic Student Interest Group, University of Colorado School of Medicine, Aurora, CO, October 29, 2013

2013 Surgical Approaches Cadaver Lab, Orthopedic Student Interest Group, University of Colorado School of Medicine, Aurora, CO, December 16, 2013

2015 Pediatric Spine Trauma, Orthopaedics Resident Lecture, University of Colorado, Denver, CO, May 27, 2015

2015 Pediatric Spine Instrumentation, Orthopaedics Resident Lecture, University of Colorado, Denver, CO, May 27, 2015

2015 Orthopedic aspects of neurofibromatosis. Neurofibromatosis Summit. Children’s Hospital Colorado, September 28, 2015

2016 Surgical Approaches Cadaver Lab, Orthopedic Student Interest Group, University of Colorado School of Medicine, Aurora, CO, January 11, 2016

2016 Scoliosis from Infants to Adolescents. Foothills Hospital, Boulder Community Hospital. Boulder, CO, May 18, 2016

2017 Spinal Fusion and Osteotomies. PICU Fellows Lecture, Children’s Hospital Colorado, February 9, 2017

2017 Evaluation and Management of Spine Trauma in Children, MTLS Lecture Series, Children’s Hospital Colorado, Aurora CO February 27, 2017

2018 Scoliosis Management in Neurofibromatosis. Neurofibromatosis Summit. Children’s Hospital Colorado, April 24, 2018

2018 ECHO-Lite, Adolescent Idiopathic Scoliosis. Children’s Hospital Colorado, November 1, 2018

2019 Lunch and Learn. Adolescent Idiopathic Scoliosis. Centennial Pediatrics, Centennial, CO July 15, 2019.

2019 Spinal trauma. Advanced Care of the Young Athlete Symposium. Aurora, CO. November 5, 2019

**National**

2006 Garg S. Flexible nails in pediatric trauma. Washington University in St Louis, Orthopaedic Surgery Grand Rounds. St Louis, MO

2008 Garg S. Lower cervical spine trauma. Washington University in St Louis, Orthopaedic Surgery Grand Rounds. St Louis, MO

2013 Back Pain and Scoliosis in Children and Adolescents, Wyoming Medical Society Annual Meeting, Laramie, WY, June 8, 2013

2013 Pediatric Spine Trauma, Orthopaedic Surgery Educational Conference, Michigan State University College of Osteopathic Medicine Statewide Campus System, Troy, MI, September 11, 2013

2013 Early Onset Scoliosis, Orthopaedic Surgery Educational Conference, Michigan State University College of Osteopathic Medicine Statewide Campus System, Troy, MI, September 11, 2013

2013 Surgical Management of Scheuermann’s Kyphosis, DePuy Synthes Spine Future Leaders Workshop: Surgical Management of Adolescent Spinal Deformity, La Jolla, CA, November 16, 2013

2014 Adolescent Idiopathic Scoliosis: Construct Planning. Medtronic Spinal Column Realignment and Growth Sparing Options: New Directions, Chicago, IL October 10-11, 2014

2014 Challenges in Pediatric Populations and Families. Medtronic Spinal Column Realignment and Growth Sparing Options: New Directions, Chicago, IL October 10-11, 2014

2016 Adolescent Idiopathic Scoliosis: Construct Planning. Medtronic Spinal Column Realignment and Growth Sparing Options: New Directions, Henderson, NV February 26-27, 2016

2016 Low grade spondylolisthesis. Medtronic Spinal Column Realignment and Growth Sparing Options: New Directions, Henderson, NV February 26-27, 2016

2016 Neuromuscular Scoliosis. Medtronic Spinal Column Realignment and Growth Sparing Options: New Directions, Henderson, NV February 26-27, 2016

2016 Posterior Column Osteotomy Planning. Medtronic Spinal Column Realignment and Growth Sparing Options: New Directions, Henderson, NV February 26-27, 2016

2016 Scheuermann’s Kyphosis. Medtronic Spinal Column Realignment and Growth Sparing Options: New Directions, Henderson, NV February 26-27, 2016

2016 Spondylolysis. Medtronic Spinal Column Realignment and Growth Sparing Options: New Directions, Henderson, NV February 26-27, 2016

2016 Diagnosis & Treatment of Scoliosis in Children from Infants to Adolescents. American Physical Therapy Association’s Section on Pediatrics Annual Conference, Keystone, CO November 11-13, 2016.

2017 Common Pediatric Fractures. Emergency & Trauma Outreach Symposium, Children’s Hospital Colorado, Billings Clinic, Billings, MT August 24-25, 2017

2017 Compartment Syndrome. Emergency & Trauma Outreach Symposium, Children’s Hospital Colorado, Billings Clinic, Billings, MT August 24-25, 2017

2017 Evaluation and Management of Spine Trauma in Children. Colorado Pediatric Trauma Conference, Children’s Hospital Colorado, Aurora, CO November 15-16, 2017

2018 Evaluation and Management of Spinal Trauma in Children, Orthopaedic Surgery Educational Conference, Michigan State University College of Osteopathic Medicine Statewide Campus System, Troy, MI, September 12, 2018

2019 Safely Executing AIS Surgery: Intraoperative Optimization, Blood Loss. Pediatric Spinal Deformity Resident and Fellow Course, Nuvasive. La Jolla, CA April 11-12, 2019

2019 Techniques to Loosen Up the Spine. Pediatric Spinal Deformity Resident and Fellow Course, Nuvasive. La Jolla, CA April 11-12, 2019

2019 Treatment 5-10yo: TGR, Shilla, VEPTR, Short Fusion. Pediatric Spinal Deformity Resident and Fellow Course, Nuvasive. La Jolla, CA April 11-12, 2019

2019 Fixation Options: How to Choose?. Pediatric Spinal Deformity Resident and Fellow Course, Nuvasive. La Jolla, CA April 11-12, 2019

2019 Complications in the management of idiopathic scoliosis. American Osteopathic Academy of Orthopedics Annual Fall Meeting, Colorado Springs, CO October 24-26, 2019.

2020 Evaluation and Management of Spinal Trauma in Children, Orthopaedic Surgery Educational Conference, Michigan State University College of Osteopathic Medicine Statewide Campus System, September 9, 2020

**Inter-National**

2003 Garg S, Dormans JP. Spinal Cord Tumors. Pediatric Orthopaedic Society of North America Tutorial: Benign and Malignant Pediatric Musculoskeletal Tumors: A Concise Approach for Orthopaedic Surgeons. Philadelphia, PA

2013 Webinar: AAOS/POSNA A New Paradigm for Treatment of Life and Limb Threatening Pediatric Musculoskeletal Infections. Faculty. October 8, 2013

2018 Webinar: Early Onset Scoliosis: Challenges and Controversies. Faculty. June 23, 2018.

2019 Instructional Course Lecture: Management of Early Onset Scoliosis – From Mehta Casts to Magnetically Expandable Rods: State of the Art in 2019. American Academy of Orthopaedic Surgeons Annual Meeting. Faculty. March 14, 2019

2019 Lunchtime Symposia: Navigation Options for Spinal Surgeons: State of the Art 2019. Scoliosis Research Society Annual Meeting. Course Chairman. September 18, 2019

2019 Half Day Course: Growth and Scoliosis. Scoliosis Research Society Annual Meeting. Faculty. September 19, 2019

2019 Spotlight Session. Navigation in the pediatric spine:  Optimizing Deformity Correction with Enabling Technology. International Pediatric Orthopaedic Symposium. Orlando, FL December 4, 2019

2020 POSNA PreCourse. Neuromuscular minimally ambulatory patient, stop short of the pelvis. Pediatric Orthopaedic Society of North America Annual Meeting. San Diego, CA May 13, 2020.

2020 Instructional Course Lecture: Management of Early Onset Scoliosis – From Mehta Casts to Magnetically Expandable Rods: State of the Art in 2020. American Academy of Orthopaedic Surgeons Annual Meeting. Faculty. March 24, 2020

2020 Instructional Course Lecture: Navigation Options for Spinal Surgeons: State of the Art 2020. American Academy of Orthopaedic Surgeons Annual Meeting. Lead moderator, faculty. March 24, 2020

2020 SRS iExperience Course Developer “Growing Rods” https://estore.srs.org/product?catalog=EOS20

2020 SRS iExperience Course Developer “Hemivertebra Resection” https://estore.srs.org/product?catalog=EOS20

2020 SRS iExperience Course Developer “Casting”

https://estore.srs.org/product?catalog=EOS20

**Courses Attended**

2005 AO ASIF Basic Principles and Techniques of Operative Fracture Management, Philadephia, PA

2006 International Pediatric Orthopaedic Symposium, Orlando, FL

2006 Treatment of Congenital Clubfoot – The Ponseti Technique, Iowa City, IA

2006 AO ASIF Midwest Regional Trauma Summit, St Louis, MO

2007 Current Concepts in Joint Replacement, Orlando, FL

2007 14th Advanced Techniques in Cervical Spine Decompression and Stabilization, St Louis, MO

2008 Baltimore Limb Deformity Course, Baltimore, MD

2009 International Pediatric Orthopaedic Symposium, Orlando, FL

2010 Complex Young Spine Forum – Thoracic Insufficiency Syndrome, Salt Lake City, UT

2016 Safety in Spine Surgery Summit, New York, NY

2019 Introductory Training Program in Quality Improvement, Institute or Healthcare Quality, Safety, and Efficiency. University of Colorado School of Medicine, Aurora, CO. October 14, 2019

**Student Mentorship and Supervision**

2011-present Clinical Director of Musculoskeletal Medical Student Program at Children’s Hospital Colorado

Physician Assistants:

2010-2011 Lauren Wilson Physician Assistant Student

Currently PA in Trauma Program at Children’s Hospital Colorado

2011 Stephanie Noble Physician Assistant Student

Residents:

2010 Jeanne Huh, MD

Mentored Dr. Huh on a research project evaluating efficacy of serial casting in early onset scoliosis that was presented on the podium at POSNA 2011. It was published in Journal of Pediatric Orthopaedics in 2012.

2010-2011 Star Schreier, MD

Mentored Dr. Schreier clinically and during fellowship application process. Dr. Schreier was accepted to a pediatric fellowship at University of Michigan for 2012-2013.

2018-2020 Tyler Tetreault, MD

Mentored Dr. Tetreault on a research project evaluating return to school and sports following surgery for adolescent idiopathic scoliosis using a prospective cohort and validated patient reported outcome metrics.

Fellows:

2010-2011 James Barsi, MD

Mentored Dr Barsi on a research project evaluation lowest instrumented vertebra tilt intra-operatively in scoliosis compared to standing radiographs post-operatively. Research presented at POSNA annual meeting 2012 and published in *Journal of Spinal Disorders and Techniques.*

2011-2012 Courtney Holland

Mentored Dr Holland on a research project evaluating risk factors for failure of iliac fixation in neuromuscular scoliosis. It was presented at POSNA annual meeting 2013 and AAOS annual meeting 2014. Research published in *Spine Deformity*.

2012-2013 Brien Rabenhorst, MD

Mentored Dr Rabenhorst on a research project evaluating utility of radiographs following spinal fusion in neuromuscular scoliosis

2013-2014 Curtis Vandenburg, MD

Mentored Dr Vandenburg on a research project evaluating a treatment pathway for reduction of surgical site infection for spinal surgery. Nominated for best clinical paper at POSNA 2015 annual meeting. Presented at AAP 2014, AAOS 2015, POSNA 2015

2015-2016 Courtney O’Donnell MD

Clinical mentorship during fellowship year. Mentored Dr. O’Donnell on dual center research project evaluating use of closed suction drains following spinal fusion for adolescent idiopathic scoliosis. Presented at AAOS annual meeting 2017.

2017 Shakti Goel, MD

Indian American Spine Alliance – Hosted Dr Goel as a visiting fellow in November/December 2017

2019 Vishwajeet Singh, MD

 Indian American Spine Alliance – Hosted Dr Singh as a visiting fellow September 2019.

2020 Diana Douleh, MD

Resident mentorship on research projects. Review article for Journal of Pediatric Orthopedics “When should instrumentation to the pelvis be considered in minimally ambulatory adolescents with neuromuscular scoliosis?”. Original research article “Lack of Agreement Between Surgeons Regarding State-of-the-Art Surgical Treatment Plans for Severe Pediatric Spinal Deformity

2020 Tyler Tetreault, MD

Senior research project mentorship. Accepted for POSNA 2021 Annual Meeting. Adolescent Athletes Return To Sports Rapidly After Posterior Spine Fusion (PSF) For Idiopathic Scoliosis (AIS): A Prospective Cohort Study

Undergraduate/Graduate Students:

2013 Ryan Delaney, Ziyin Liu, Jose Rivas

Mentored three University of Colorado Denver bioengineering students on a semester long project “Prediction of Spinal Rod Shape in Scoliosis”

**13. GRANT SUPPORT**

2015 Search for Biomarkers in Idiopathic Scoliosis: RNA Sequencing of Vertebral Bone, Bone Marrow Aspirate, and Peripheral Blood Samples from Patients with Idiopathic Scoliosis. Co-Investigator. $161,424 K2M, Inc.

2016 Metabolic Phenotype, insulin signaling and lipotoxicity in osteoblasts from lean and overweight adolescent girls. Co-Investigator. $20,000 Child and Maternal Health Pilot Mentored Faculty Award. Colorado Clinical & Translational Sciences Institute

2016 Use of Ultrasonic Bone Scalpel in Adolescent Idiopathic Scoliosis – Randomized Clinical Trial. Primary Investigator. $10,000 Scoliosis Research Society New-Investigator Grant.

2017 VCR surgical plan pre- and post-3D modeling

 Principal Investigator. $9,800 Pediatric Orthopaedic Society of North America Start Up Research Grant.

2017 Effect of I-Beam rod geometry on axial derotation of the apical vertebra in posterior spinal fusion: A prospective study with historical comparative cohort. Primary Investigator. $10,000 University of Colorado Department of Orthopedics Pilot Research Grant.

2018 Effect of I-Beam rod geometry on axial derotation of the apical vertebra in posterior spinal fusion: A prospective study with historical comparative cohort. Primary Investigator. $25,000 Ponzio Research Accelerator Award

2019 Reliability of the AOSpine Classification System in Children. Co-Investigator. $30,000, Pediatric Orthopaedic Society of North America Biomet Zimmer Spine Grant.

**14. BIBLIOGRAPHY**

**Refereed Scientific Publications**

1. Fernandes ND, Wu QL, Kong D, Puyang X, **Garg S,** Husson RN. A mycobacterial extracytoplasmic

 sigma factor involved in survival following heat shock and oxidative stress. Journal of Bacteriology. 1999; 181:4266-74. PMID: 10400584.

2. **Garg S**, Dormans JP. Primary tumors of the spine in children: A review from the pediatric musculoskeletal tumor program at the Children’s Hospital of Philadelphia. University of Pennsylvania Orthopaedic Journal, 2003; 16:19-29.

3. **Garg S**, Hosalkar HS, Dormans JP. Quadriplegia in a 10 year-old boy due to multiple cervical neurofibromas. Spine. 2003; 28:E339-E343. PMID: 12973159.

4. **Garg S**, Mehta S, Dormans JP. An atypical presentation of Langerhans cell histiocytosis of the cervical spine in a child. Spine. 2003; 28:E445-E448. PMID: 14595172.

5. **Garg S**, Dormans JP. Images in clinical medicine. Rotationplasty for Ewing’s sarcoma of the distal femur. New England Journal of Medicine, 2004; 351:e7. PMID: 15317906.

6. **Garg S**, Mehta S, Dormans JP. Langerhans cell histiocytosis of the spine in children: long-term follow-up. Journal of Bone and Joint Surgery – American, 2004; 86:1740-1750. PMID: 15292423.

7. Hosalkar HS, **Garg S**, Pollack A,Dormans JP. The diagnostic accuracy of MRI vs. CT imaging for osteoid osteoma in children. Clinical Orthopaedics and Related Research*,* 2005; 433:171-17. PMID: 15805954.

8. **Garg S,** Mehta S, Dorman JP. Modern surgical treatment of primary aneurysmal bone cyst of the spine in children and adolescents. Journal of Pediatric Orthopaedics*,* 2005; 25:387-392. PMID: 15832161.

9. Kocher MS, **Garg S**, Micheli LJ. Physeal sparing reconstruction of the anterior cruciate ligament in skeletally immature prepubescent children and adolescents. Journal of Bone and Joint Surgery – American, 2005; 87:2371-2379. PMID: 16264110.

10. **Garg S**, Dormans JP. Tumors and tumor-like conditions of the spine in children. Journal of the American Academy of Orthopaedic Surgeons, 2005; 13; 372-381. PMID: 16224110.

11. Kocher MS, **Garg S,** Micheli, LJ. Physeal sparing reconstruction of the anterior cruciate ligament in skeletally immature prepubescent children and adolescents: Surgical Technique. Journal of Bone and Joint Surgery – American, 2006; 88: Supplement 1, Part 2, 283-293. PMID: 16951100.

12. Hosalkar HS, Greenberg J, Gaugler RL, **Garg S**, Dormans JP. Abnormal scarring with keloid formation after osteochondroma excision in children with multiple hereditary exostoses. Journal of Pediatric Orthopaedics*,* 2007; 27:333-337. PMID: 17414021.

13. **Garg S**, Hosalkar HS, Dormans JP. Autofusion of the cervical spine in two children with Langerhans cell histiocytosis. American Journal of Orthopaedics. 2007; 36:E124-126.

14. **Garg S**, Dobbs MD. Use of the Ponseti method for recurrent clubfoot following posteromedial release. Indian Journal of Orthopaedics*,* 2008; 42:68-72. PMID: 19823658.

15. Simon SL, Auerbach JD, **Garg S**, Sutton LN, Telfeian AE, Dormans JP. Efficacy of spinal instrumentation and fusion in the prevention of postlaminectomy spinal deformity in children with intramedullary spinal cord tumors. Journal of Pediatric Orthopaedics. 2008; 28:244-249. PMID: 18388723.

16. **Garg S**, Dobbs MB, Schoenceker PL, Luhmann SJ, Gordon JE. Surgical treatment of traumatic pediatric humeral diaphyseal fractures with titanium flexible intramedullary nails. Journal of Childrens Orthopaedics*,* 2009; 3:121-127. PMID: 19308623.

17. **Garg S**, Porter K. Improved bracing compliance in children with clubfeet using a dynamic orthosis. Journal of Childrens Orthopaedics. 2009, 3:271-276. PMID: 19495824.

18. Gordon JE, **Garg S.** Pediatric Humerus Fractures: Indications and Technique for Flexible Titanium Intramedullary Nailing. Journal of Pediatric Orthopaedics*,* 2010;30: S73-S76. PMID: 17065959.

19. **Garg S**. Scoliosis treatment depends on age of child, severity of condition. CAFP News. 2011; Winter Issue: 19-21.

20. **Garg SB,** Oetgen M, Rathjen KE, Richards BS. Kyphectomy improves sitting and skin problems in patients with myelomeningocele. Clinical Orthopaedics and Related Research, 2011;469(5):1279-1285. PMID: 21042894.

### 21. Anakwenze OA, Auerbach JD, Buck DW, Garg S, Simon SL, Sutton LN, Sponseller PD, Dormans JP. The role of concurrent fusion to prevent spinal deformity after intramedullary spinal cord tumor excision in children. Journal of Pediatric Orthopedics, 2011;31:475-479. PMID: 21654452.

22. **Garg S,** Erickson MA. Evaluation and management of back pain in adolescents. CAFP News. 2012; Winter Issue 22-26.

23. Rabenhorst B, **Garg S**, Herring JA. Posterior spinal fusion in patients with Ehlers Danlos syndrome: A report of six cases. Journal of Children’s Orthopaedics, 2012;6(2):131-136. PMID: 23730344.

24. Baulesh DM, Huh J, Judkins T, **Garg S**, Miller NH, Erickson MA.The role of serial casting in early onset scoliosis. Journal of Pediatric Orthopaedics, 2012;32(7):658-663. PMID: 22955527.

25. Fletcher ND, Schiller JR, **Garg S**, Weller A, Larson AN, Kwon M, Browne R, Copley L, Ho C. Increased severity of type III supracondylar humerus fratures in the preteen population. Journal of Pediatric Orthopaedics, 2012;32(6):567-572. PMID: 22892617.

26. **Garg S**, Engelman G, Yoshihara H, McNair B, Chang F. The Relationship of GMFCS level and hip dysplasia on the pattern and progression of scoliosis in children with cerebral palsy. Spine Deformity, 2013:1:266-271. PMID: 27927357.

27. Mansour A, Ballard MR, **Garg S**, Baulesh D, Erickson MA. The use of barbed sutures during scoliosis fusion wound closure: a quality improvement analysis. Journal of Pediatric Orthopaedics, 2013;33(8):786-790. PMID: 24213622.

28. Weller A, **Garg S**, Larson AN, Fletcher ND, Schiller JR, Kwon M, Copley LA, Browne R, Ho CA. Management of the pediatric pulseless supracondylar humerus fracture: Is vascular exploration necessary? Journal of Bone and Joint Surgery – American, 2013;95(21):1906-1912. PMID: 24196459.

29. **Garg S**, Weller A, Larson AN, Fletcher ND, Kwon M, Schiller J, Browne R, Copley L, Ho C. Clinical characteristics of severe supracondylar humerus fractures in children. Journal of Pediatric Orthopaedics, 2014;34(1):34-39. PMID: 23812149.

30. LaGreca J, Hotchkiss M, Carry P, Messacar K, Nyquist AC, Erickson M, **Garg S**. Bacteriology and risk factors for development of late (greater than one year) deep infection following spinal fusion with instrumentation. Spine Deformity, 2014;2(3):186-190. PMID: 27927416.

31. **Garg S**, Holland C, LaGreca J, McNair B, Erickson M. Predicting failure of iliac fixation in neuromuscular spine deformity. Spine Deformity, 2014;2(3):214-218. PMID: 27927421.

32. **Garg S**, LaGreca J, St. Hilaire T, Gao D, Glotzbecker M, Li Y, Smith JT, Flynn J. Wound complications of Vertical Expandable Prosthetic Titanium Rib Incisions. Spine, 2014;39(13):E777-781. PMID: 24732832.

33. Glotzbecker MP, **Garg S**, Akbarnia BA, Vitale MG, St Hillaire T, Joshi A. Surgeon practices regarding infection prevention for growth friendly spinal procedures. Journal of Children’s Orthopaedics, 2014;8:245-250. PMID: 24744235.

34. Larson AN, **Garg S,** Weller A, Fletcher ND, Schiller JR, Kwon M, Browne R, Copley LA, Ho C. Operative treatment of type II supracondylar humerus fractures: Does time to surgery affect complications? Journal of Pediatric Orthopaedics, 2014;34(4):382-387. PMID: 24248589.

35. Glotzbecker M, Johnston C, Miller P, Smith J, Perez-Grueso FS, Woon R, Flynn J, Gold M, **Garg S**, Redding G, Cahill P, Emans J. Is there a relationship between thoracic dimensions and pulmonary function in early onset scoliosis? Spine, 2014;39(19):1590-1595. PMID: 24875963.

36. **Garg S**, Kipper E, LaGreca J, Carry P, Erickson MA. Are routine post-operative radiographs required during the first year following surgery for idiopathic scoliosis? A retrospective cohort analysis of implant failure and surgery revision rates. Journal of Pediatric Orthopaedics, 2015;5(1):33-38. PMID: 24840654.

37. Muchow R, Riccio AI, **Garg S**, Ho CA, Wimberly RL. Neurologic and vascular injury associated with supracondylar humerus fractures and ipsilateral forearm fractures in children. Journal of Pediatric Orthopaedics, 2015;5(3):121-125. PMID: 24919135.

38. LaGreca J, Hotchkiss M, **Garg S**, Erickson MA. Management of delayed (greater than one year) deep infection after spinal fusion: A retrospective cohort study. Journal of Pediatric Orthopaedics, 2015;35(3):266-270. PMID: 25025743.

39. Davern M, **Garg S**, Hankinson T. Operative management of traumatic cervical spine distraction and complete cord transection in a 3-year-old patient. Journal of Neurosurgery: Pediatrics, 2015;15(2):214-219. PMID: 25415253.

40. **Garg S,** Niswander CR, Pan Z, Erickson MA. Crosslinks do not improve clinical or radiographic outcomes of posterior spinal fusion with pedicle screws in adolescent idiopathic scoliosis: A multicenter cohort study. Spine Deformity, 2015;3(4):338-344. PMID: 27927479.

41. Barsi J, **Garg S**, Caprio B, Baulesh D, Erickson MA. Do intraoperative LIV-tilt and disc angle remain stable at 2 year follow-up compared to upright radiographs in patients with idiopathic scoliosis: A retrospective cohort study. Journal of Spinal Disorders & Techniques, 2015;28(7):264-269. PMID: 24662284.

42. **Garg S**, Cyr M, Glotzbecker M, Carry P, Smith JT, Sawyer J, Pahys J, Luhmann SJ, Flynn J, El-Hawary R, Vitale M, St Hilaire T, Children’s Spine Study Group. Variability of surgical site infection with VEPTR at 8 centers: A retrospective cohort analysis. Spine Deformity, 2016;4(1):59-64. PMID: 27852502.

43. **Garg S.** Management of scoliosis in patients with Duchenne’s muscular dystrophy and spinal muscular atrophy: A literature review. Journal of Pediatric Rehabilitation Medicine, 2016;9(1):23-29. PMID: 26966797.

44. **Garg S**, Bloch N, Cyr M, Carry P. Routine radiographs at the time of pin removal after closed reduction and percutaneous pinning for type 2 supracondylar humerus fractures do not change management: A retrospective cohort study. Journal of Children’s Orthopaedics, 2016;10(4):329-33. PMID: 27270906.

45. **Garg S,** Cyr M, St. Hilaire T, Pan Z, Thompson GC, Vitale MG, Children’s Spine Study Group, Growing Spine Study Group. Classification of early onset scoliosis has excellent inter and intra observer reliability. Journal of Pediatric Orthopaedics, 2017;37(1):e1-e3. PMID: 26600295.

46. O’Donnell C, Michael N, Bloch N, Erickson M, **Garg S**. Strategies to Minimize Blood Loss and Transfusion in Pediatric Spine Surgery. Journal of Bone and Joint Surgery Reviews, 2017;5(5):e1. PMID 28471775.

47. O’Donnell C, Bloch N, Michael N Erickson M, **Garg S**. Management of Scoliosis in Children with Osteogenesis Imperfecta. Journal of Bone and Joint Surgery Reviews, 2017;5(7):e8. PMID 28742716.

50. **Garg** **S**, McCarthy JJ, Goodwin R, Kolmodin J, Sankar WN, Franklin C, Armstrong D, Fryzel D, Hassenbein S, Meder C. Complication rates following bone morphogenetic protein (BMP) use in orthopaedic surgery in children: A concise multicenter retrospective cohort study. Journal of Pediatric Orthopedics, 2017;37(6):e375-e378. PMID 27603194.

51. Park HY, Matsumoto H, Feinberg N, Roye DP, Kanj WW, Betz RR, Cahill PJ, Glotzbecker MP, Luhmann SJ, **Garg S**, Sawyer JR, Smith JT, Flynn JM, Vitale MG. The Classification for Early-onset Scoliosis (C-EOS) Correlates With the Speed of Vertical Expandable Prosthetic Titanium Rib (VEPTR) Proximal Anchor Failure. Journal of Pediatric Orthopedics, 2017;37(6):381-386. PMID 26566066.

52. LaGreca J, Flynn T, Cahill P, Samdani A, Vitale M, El-Hawary R, Smith J, Phillips J, Flynn J, Children’s Spine Study Group, **Garg S**. Patients without Intraoperative Neuromonitoring (IONM) Alerts During VEPTR Implantation did not Sustain Neurologic Injury during Subsequent Routine Expansions: a Retrospective Multi-Center Cohort Study. Journal of Pediatric Orthopaedics, 2017:37(8): e619-e624. PMID: 28328563.

53. Gomez J, Grzywna A Miller P, Pawelek J, McClung A, Karlin L, Glotzbecker M, Dastous J, Sanders J, **Garg S**, St. Hilaire T, Sturm P, Sponse P. Initial Cast Correction as a Predictor of Treatment Outcome for Infantile Idiopathic Scoliosis. Journal of Pediatric Orthopaedics, 2017:37(8): e625-e630. PMID: 28834850.

54. DeFrancesco C, Flynn JM, Smith J, Luhmann S, Sawyer J, Glotzbecker M, Pahys J, **Garg S**, Vitale M, Farrington D, Sturm P, Children’s Spine Study Group. Clinically Apparent Adverse Reactions to Intra-Wound Vancomycin Powder in Early Onset Scoliosis Are Rare. Journal of Children’s Orthopaedics, 2017:11(6):414-418. PMID: 29263752

55. Michael N, Carry P, Erickson M, Bloch N, Gibbons S, O’Donnell C, **Garg S**. Spine and Thoracic Height Measurements have Excellent Inter-rater and Intra-rater Reliability in Patients with Early Onset Scoliosis. Spine, 2017:43(4):270-274. PMID: 28665821.

56. Michael N, Palmer C, Smith J, Pan Z, St. Hilaire T, Morgan J, Heagy V, Children’s Spine Study Group, **Garg S**. Complication Severity Score for Growth-Friendly Surgery Has Strong Inter-rater and Intra-rater Agreement. Journal of Pediatric Orthopaedics, 2018:38(4):e190-e193. PMID: 29389720

57. Vandenberg C, Niswander C, Carry P, Bloch N, Pan Z, Erickson M, **Garg S**.Compliance with a Comprehensive Antibiotic Protocol Improves Infection Incidence in Pediatric Spine Surgery. Journal of Pediatric Orthopaedics, 2018:38(5):287-292. PMID: 27280896.

58. Woon RP, Skaggs DL, Sanders J, **Garg S**, Sawyer JR, Fletcher N, Andras LM. How Precise are Clinical Height Measurements in Scoliosis Patients? Current Orthopaedic Practice, 2018:29(3):223-225.

59. O’Donnell C, Michael N, Pan X, Emans J, **Garg S**, Erickson M. Anterior Spinal Fusion and Posterior Spinal Fusion Both Effectively Treat Lenke Type 5 Curves in Adolescent Idiopathic Scoliosis: A Multicenter Study. Spine Deformity, 2018:6(3):231-240. PMID: 29735131

60. Thomas JJ, Levek C, Quick HD, Brinton JT, **Garg S**, Cohen MN. Utility of gabapentin in meeting physical therapy goals following posterior spinal fusion in adolescent patients with idiopathic scoliosis. Pediatric Anesthesia, 2018: 28(6): 558-563. PMID: 29878543

61. **Garg S**, Bloch N, Potter M, Quick H, Palmer C, Michael N, O’Donnell C, Erickson M. Topical Vancomycin in Pediatric Spine Surgery Does Not Reduce Surgical Site Infection: A Retrospective Cohort Study. Spine Deformity, 2018: 6(5):523-528. PMID: 30122387

62. Gandhi JG, Shea KG, Sponseller PD, Brighton BK, Ganley TJ, **POSNA Evidence Based Practice Committee**. Evidence-based medicine in pediatric orthopaedics: Evidence-based practice committee summary of levels of evidence, clinical practice guidelines, appropriate use criteria, and best practice guidelines. Journal of Pediatric Orthopaedics, 2018: 38(6):e340-e353. PMID: 29727412

63. Striano BA, Refakis C, **Garg S**, El-Hawary R, Pahys JM, Vitale M, Campbell RM, Flynn JM, Cahill PJ. How often do you lengthen? A physician survey on lengthening practice for prosthetic rib devices. Spine Deformity, 2018: 6(4):473-477. PMID: 29886922

64. Nossov S, Campbell RM, Mayer OH, Smith JT, **Garg S**, Flynn JM, Cahill PJ, Children's Spine SG. The VEPTR: Are we reducing respiratory assistance requirements?. Journal of Pediatric Orthopaedics, 2019:39(1):28-32. PMID: 28399050

65. Ramo BA, Tran D, , Reddy A, Brown K, Niswander CR, Erickson MA, **Garg S**. Delay to surgery greater than 6 months leads to significant deformity progression in Risser 0, pre-menarchal adolescent idiopathic scoliosis (AIS) patients: A retrospective cohort study. Spine Deformity, 2019:7(3):428-435. PMID: 31053313

66. **Garg S**, Erickson MA, Kim E, Quick H. Use of Activity Trackers in Orthopedic Research and Clinical Practice. Journal of the American Academy of Orthopaedic Surgeons, 2019:27(19):e859-866. PMID: 30829985

67. Roaten JD, Kelly DM, Yellin JL, Flynn JM, Cyr M, **Garg S**, Broom A, Andras LM, Sawyer JR. Pediatric femoral shaft fractures: A multicenter review of the AAOS clinical practice guidelines before and after 2009. Journal of Pediatric Orthopaedics, 2019:39(8):394-399. PMID: 28399048

68. **Garg S**, Palmer C, Whitmore W, Cyr M, Michael N, Kim EB, Boucharel W. Triggered EMG (t-EMG) Values of Pedicle Screws with a Powered Screwdriver vs a Standard Probe in Adolescent Idiopathic Scoliosis Do Not Agree: A Prospective Validation Study. The Neurodiagnostic Journal, 2019;59(3):152-162. PMID: 31251123

69. Gibly RF, **Garg S**, Mehlman CT. The community orthopaedic surgeon taking trauma call: Radial neck fracture pearls and pitfalls. Journal of Orthopaedic Trauma, 2019;33(Suppl 8):S17-S21. PMID: 31290841

70. O’Donnell C, **Garg S**. Comment on: Slipped capital femoral epiphysis and Blount’s disease as indicators for early metabolic surgical intervention. Surgery for Obesity and Related Diseases, 2019; 15:1842-1843.

71. Helenius IJ, Saarinen AJ, White KK, McClung A, Yazici M, **Garg S**, Thompson GH, Johnston CE, Pahys JM, Vitale MG, Akbarnia BA, Sponseller P. Results of growth-friendly management of early onset scoliosis in children with and without skeletal dysplasias: a matched comparison. Bone and Joint Journal, 2019:101-B(12):1563-1569. PMID: 31787003

72. **Garg S**, Khechoyan D, Kim E, French B. Multi-layered and flap closure techniques for pediatric spinal deformity surgery: A standard review. Journal of the American Academy of Orthopaedic Surgeons, 2020;28(3):e92-e99. PMID: 31977607

73. Anari J, Flynn JM, Cahill P, Vitale M, Smith JT, Gomez JA, **Garg S**, Baldwin K, Children’s Spine Study Group. Unplanned return to OR (UPROR) for children with early onset scoliosis (EOS): a comprehensive evaluation of all diagnoses and instrumentation strategies. Spine Deformity, 2020;8(2):295-302. PMID: 32030640

74. Murphy R, Barfield WR, St. Hilaire T, Smith JT, Emans J, Samdani A, **Garg S**, Sawyer JR, Pahys JM, Children’s Spine Study Group. Prospectively collected surgeon indications for discontinuation of lengthening program for early onset scoliosis. Spine Deformity, 2020;8(1):129-133. PMID: 31981149

75. Mo AZ, Miller PE, Glotzbecker MP, Li Y, Fletcher ND, Upasani VV, Riccio AI, Hresko MT, Krengel WF, Spence D, **Garg S**, Hedequist DJ. The reliability of the AOSpine thoracolumbar classification system in children: Results of a multicenter study. Journal of Pediatric Orthopaedics, 2020;40(5):e352-356. PMID: 32032218

76. Brooks Peterson M, Cohen, MN, O’Neill B, Garg S, Child J, Henthorn T, Galinkin J. Preoperative Vancomycin Administration for Surgical Site Prophylaxis: Plasma and Soft Tissue Concentrations in Pediatric Neurosurgical and Orthopedic Patients. Anesthesia & Analgesia, 2020;130(5):1435-1444. PMID: 31397701

77. Ramirez N, Betz R, Vitale M, Smith J, **Garg S**, Pediatric Spine Study Group. Incidence of complications in the management of non-ambulatory neuromuscular early onset scoliosis with a rib based growing system: high versus low tone patients. European Journal of Orthopaedic Surgery and Traumatology, 2020;30:621-627. PMID: 3186270

78. LaValva S, Adams A, MacAlpine E, Gupta P, Hammerberg K, Thompson G, Sturm P, **Garg S**, Anari J, Sponseller P, Flynn J, Pediatric Spine Study Group, Cahill P. Serial casting in neuromuscular and syndromic early onset scoliosis (EOS) can delay surgery over two years. Journal of Pediatric Orthopaedics, 2020:40(8):e772-e779. PMID: 32301848

79. Roye B, Simhon M, Matsumoto H, **Garg S**, Redding G, Samdani A, Smith JT, Sponseller P, Vitale MG, Children’s Spine Study Group, Growing Spine Study Group. Bigger is better: larger thoracic height is associated with increased health related quality of life at skeletal maturity. Spine Deformity, 2020:8;771-779. PMID: 32162196

80. Yu H, Kim E,**Garg S**. Development of a spring-based weight system for halo gravity traction for complex pediatric spinal deformity. Spine Deformity, 2020:8(5);879-884. PMID: 32303999.

81. Nielsen E, Andras L, Michael N, **Garg S**, Paloski M, Brighton B, Ferrero E, Mazda K, Ilharreborde N, Skaggs D. 40% Re-operation rate in adolescents with spondylolisthesis. Spine Deformity, 2020:8(5):1059-1067. PMID: 32378040

82. Larson AN, **Garg S**, Erickson MA, Sponseller PD, Brito Campana JP, Floccari L, Aubin CE, Polly D. Willingness to enroll in a surgical randomized controlled trial: Patient and parent preferences regarding implant density for adolescent idiopathic scoiosis fusion. Spine Deformity, 2020:8(5);957-963. PMID: 32495208

83. LaValva S, MacAlpine EM, Kawakami N, Gandhi JS, Morishita K, Sturm PF, **Garg S,** Glotzbecker MP, Anari JB, Flynn JM, Pediatric Spine Study Group, Cahill P. Awake serial body casting for the management of infantile idiopathic scoliosis: Is general anesthesia necessary? Spine Deformity, 2020:8(5);1109-1115. PMID: 32383143

84. Matsumoto H, Auran E, Fields MW, Hung CW, St. Hilaire T, Roye B, Sturm P, **Garg S**, Sanders J, Oetgen M, Levine S, Roye D, Vitale M. Serial casting for early onset scoliosis and its effects on health-related quality of life during and after discontinuation of treatment. Spine Deformity, 2020:8(6);1361-1367. PMID: 32757176

**Pending Press**

Matsumoto H, Marciano G, Redding G, Ha J, Luhmann S, **Garg S**, Roye D, White K, Pediatric Spine Study Group. Association between health-related quality of life outcomes and pulmonary function testing. Spine Deformity, 2020 PMID: 32851599

 Zuckerman SL, Lenke LG, Cerpa M, Kelly MP, Yaszay B, Sponseller P, Erickson M, **Garg S**, Pahys J, Cahill P, Sides B, Gupta M, Fox Pediatric Spinal Deformity Study Group. Interobserver and intraobserver reliability of determining the deformity angular ratio in severe pediatric deformity curves. Spine Deformity, 2020. Accepted. PMID 33201497

Li GY, author list. Growth-friendly surgery results in more growth but a higher complication rate and unplanned returns to the operating room compared to single fusion in neuromuscular early onset scoliosis: A multi-center retrospective cohort study. Spine Deformity, accepted.

**Book Chapter**

**Garg S**, Miller TL. Special Considerations for the Pediatric Patient. In: Nutritional Aspects of HIV Infection. Miller TL and Gorbach S, eds. New York: Arnold Publishers, 1999.

Miller TL, **Garg S**. Gastrointestinal and Nutritional Problems of HIV-Infected Children. In: Pediatric AIDS: The Challenge of HIV Infection in Infants, Children, and Adolescents, 3rd edition. Pizzo PA and Wilfert CM, Eds. Baltimore: Williams & Wilkins, 1998.

**Garg S**. UP Hills, Calcutta, Andaman Islands. In Let’s Go: India 2000*.* Christiana King, ed. New York: St. Martin Press, 1999.

**Garg S**, Gordon JE. Section 15: Distal tibia/fibula. In: Surgical Management of Pediatric Long Bone Fractures. Scherl SA ed. Rosemont, IL: American Academy of Orthopaedic Surgeons Monograph Series, 2009.

**Garg S,** Johnston CE. Early onset scoliosis. In: Orthopaedic Knowledge Update: Pediatrics 4. Rosemont, IL: American Academy of Orthopaedic Surgery, 2011.

**Garg S,** Buchowski J. Ch 151. Post-operative early and late wound/implant infections. In: The Textbook of Spinal Surgery. 3rd edition. Bridwell KH, DeWald RL Eds. Philadelphia: Wolters Kluwer / Lippincott Williams & Wilkins, 2011

**Garg S,** Dormans JP. Ch 138 Benign tumors of the spine. In: The Textbook of Spinal Surgery. 3rd edition. Bridwell KH, DeWald RL Eds. Philadelphia: Wolters Kluwer / Lippincott Williams & Wilkins, 2011

**Garg S.** Developmental dysplasia of the hip. In: *Decision Support in Medicine : Pediatrics.* Retrieved from <http://www.decisionsupportinmedicine.com>

**Garg S,** Erickson MA. Spondylolysis and Spondylolisthesis. In: Spine Surgery Basics. Patel A, Patel V, Harrop J, Burger E, Eds. Springer, 2014.

Erickson MA, **Garg S.** Fractures of the Proximal Radius and Ulna. In: Rockwood and Wilkins’ Fractures in Children, 8th edition. Flynn JM, Skaggs DL, Waters PM Eds. Philadelphia: Wolters Kluwer / Lippincott Williams & Wilkins, 2015

Erickson MA, **Garg S.** Fractures of the Proximal Radius and Ulna. In: Rockwood and Wilkins’ Fractures in Children, 9th edition. Flynn JM, Skaggs DL, Waters PM Eds. Philadelphia: Wolters Kluwer / Lippincott Williams & Wilkins, 2020

**Garg S,** Buchowski J. Ch 152. Post-operative early and late wound/implant infections. In: Bridwell and DeWald’s Textbook of Spinal Surgery. 4th edition. Gupta MC, Bridwell KH, Eds. Philadelphia: Wolters Kluwer, 2020

Fedorak GT, **Garg S**, Heflin JA, Smith JT. Ch 44. Management of early-onset scoliosis – from Mehta casts to magnetically expandable rods: State of the art in 2020. In: Instructional Course Lectures, Volume 69. Lieberman JR, Khanuja HS, Eds. Wolters Kluwer, 2020.

**Refereed Scientific Abstracts**

**National**

**Garg S**. Complications in the treatment of Supracondylar Humerus Fractures. Brandon Carrell

Visiting Professorship. Texas Scottish Rite Hospital for Children, Dallas, TX, 2010

**Podium**

**Garg S.** Increased rates of anchor failure can be predicted by an early onset scoliosis severity score. Brandon Carrell Visiting Professorship. Texas Scottish Rite Hospital for Children, Dallas, TX, 2010

**Podium**

**Garg S**. Retrospective review of the morbidity and complications of pediatric supracondylar elbow fractures. Brandon Carrell Visiting Professorship. Texas Scottish Rite Hospital for Children, Dallas, TX, April 15-16, 2011

**Podium**

Huh J, Baulesh DM, Judkins T, **Garg S**, Miller NH, Erickson MA. The role of serial casting in early onset scoliosis. Society of Military Orthopaedic Surgeons. San Diego, CA, December 12-16, 2011

**Podium**

Huh J, Baulesh DM, Judkins T, **Garg S**, Miller NH, Erickson MA. The role of serial casting in early onset scoliosis. Children’s Orthopaedic Day, Aurora, CO, April 22, 2011

**Podium**

Barsi J, **Garg S**, Baulesh D, Erickson MA. Intraoperative and postoperative LIV-tilt and disc angle in patients with idiopathic scoliosis. Children’s Orthopaedic Day, Aurora, CO, April 22, 2011

**Podium**

**Garg S,** Holland CA, LaGreca J, McNair B, Erickson MA. Predicting failure of iliac fixation in neuromuscular spine deformity. Children’s Orthopaedic Day, Aurora, CO, April 6, 2012

**Podium**

**Garg S**, Kipper E, LaGreca J, Carry P, Erickson MA. Are routine radiographs needed during the first year after spinal fusion for adolescent idiopathic scoliosis? Children’s Orthopaedic Day, Aurora, CO, April 19, 2013.

**Podium**

Rabenhorst B, LaGreca J, Carry P, Erickson MA, **Garg S**. Are routine radiographs needed following surgical treatment of neuromuscular scoliosis? Children’s Orthopaedic Day, Aurora, CO, April 19, 2013.

**Podium**

Garg S, Niswander C, Pan Z, Erickson MA. Do crosslinks improve clinical or radiographic outcomes of posterior spinal fusion with pedicle screws in adolescent idiopathic scoliosis? A multi-center cohort study. Children’s Orthopaedic Day, Aurora, CO, April 18, 2014.

**Podium**

Garg S, Erickson M, Thomas J, Quick B, Kim EB, Carry P. Use of ultrasonic bone scalpel in adolescent idiopathic scoliosis: randomized clinical trial. Children’s Orthopedic Day, Aurora, CO, April 20, 2018

**Garg S,** Kim E, Purnendu G, Woon R, Pediatric Spine Study Group. Current Practices for Running Expansion Clinics for Patients with Magnetic Controlled Growth Rods (MCGR): Survey of Experts. Center for Research in Outcomes for Children’s Surgery. Children’s Hospital Colorado, Aurora, CO, February 28, 2020.

**Poster**

**Garg S**, Kim E, Wagner J, Hankinson T, Erickson M. Vertebral Column Resection (VCR) Surgical Planning Pre- and Post-3D Modeling. Center for Research in Outcomes for Children’s Surgery. Children’s Hospital Colorado, Aurora, CO, February 28, 2020.

**Poster**

**International**

Simon SL, Burnett MG, **Garg S**, Telfeian A, Dormans JP, Sutton LN. The efficacy of prophylactic spinal fusion in the prevention of post-surgical spinal deformity in pediatric intramedullary spinal cord tumors. American Association of Neurological Surgeons/Congress of Neurological Surgeons Section on Pediatric Neurological Surgery. Scottsdale, AZ, December 4-7, 2002

**Podium**

**Garg S**, Dormans JP. Efficacy of spinal instrumentation and fusion in the prevention of post

laminectomy spinal deformity in children with intramedullary spinal cord tumors. Soma Weiss Research Day, Harvard Medical School. Boston, MA, April 16, 2003.

**Poster**

**Garg S**, Mehta S, Patel RV, Dormans JP. Langerhans cell histiocytosis of the spine in children. Pediatric Orthopaedic Society of North America. Amelia Island, FL, May 2-4, 2003

**Podium**

**Garg S**, Simon SL, Burnett MG, Sutton LN, Dormans JP. Spinal deformity following surgical excisionof intramedullary spinal cord tumors in children. Pediatric Orthopaedic Society of North America. Amelia Island, FL, May 2-4, 2003.

**Poster**

**Garg S**, Simon SL, Sutton, LN, Dormans JP. Efficacy of spinal instrumentation and fusion in the prevention of post-laminectomy spinal deformity in children with intramedullary spinal cord tumors. Scoliosis Research Society. Quebec City, Quebec, CANADA, Sep 11-13, 2003

**Podium**

**Garg S**, Mehta S, Dormans JP. Langerhans cell histiocytosis of the spine in children. Scoliosis Research Society. Quebec City, Quebec, CANADA, Sep 11-13, 2003

**Podium**

**Garg S**, Mehta S, Dormans JP. *Aneurysmal bone cysts of the spine in children and adolescents*. Scoliosis Research Society. Quebec City, Quebec, CANADA, Sep 11-13, 2003.

**Poster**

**Garg S,** Simon SL, Sutton LN, Dormans JP. Prevention of post-Laminectomy spinal deformity in Children with Intramedullary spinal cord tumors*.* American Academy of Orthopaedic Surgeons. San Francisco, CA Mar 10-14, 2004.

**Poster**

**Garg S,** Mehta S, Dormans JP. Langerhans cell histiocytosis of the spine in children. American

Academy of Orthopaedic Surgeons. San Francisco, CA, 2004

**Podium**

**Garg S,** Ganley TJ, Flynn JM, Amro R, Gregg JR. Antegrade drilling for osteochondritis dessicans of the knee in adolescents. American Academy of Orthopaedic Surgeons. San Francisco, CA, 2004

**Podium**

**Garg S,** Ganley TJ, Flynn JM, Amro R, Gregg JR. Antegrade drilling for osteochondritis dessicans of the knee in adolescents*.*  European Pediatric Orthopaedic Society. Geneva, SWITZERLAND, Mar 31-Apr 3, 2004

**Poster**

Greenberg J, Hosalkar HS, **Garg S**, Dormans JP. Multiple hereditary exostoses and keloid formation: Is there a correlation? European Pediatric Orthopaedic Society. Geneva, SWITZERLAND, Mar 31- Apr 3, 2004

**Poster**

Hosalkar HS, **Garg S**, Dormans JP. MRI vs CT for advanced imaging of osteoid osteoma in children. European Pediatric Orthopaedic Society. Geneva, SWITZERLAND, Mar 31-Apr 3, 2004

**Poster**

**Garg S**, Mehta S, Dormans JP. Modern surgical treatment of primary aneurysmal bone cyst of the spine in children and adolescents. European Pediatric Orthopaedic Society. Geneva, SWITZERLAND Mar 31-Apr 3, 2004

**Podium**

**Garg S,** Dormans JP. Langerhans cell histiocytosis of the spine in children. Soma Weiss Research Day, Harvard Medical School. Boston, MA, April 15, 2004.

**Poster**

Hosalkar HS, **Garg S,** Pollock A, Dormans JP. The diagnostic accuracy of MRI vs CT imaging for osteoid osteoma in children. Pediatric Orthopaedic Society of North America. St Louis, MO, 2004

**Podium**

Hosalkar HS, Greenberg J, Dormans JP, **Garg S**. Keloid formation following surgical treatment of multiple hereditary exostoses. American Academy of Orthopaedic Surgeons. Washington, DC, Feb 23-27, 2005

**Podium**

Micheli LJ, Kocher MS, **Garg S**, Dichtel L. Physeal sparing ACL reconstruction in prepubescent children. American Academy of Orthopaedic Surgeons. Washington, DC, Feb 23-27, 2005

**Podium**

Dormans JP, **Garg S**, Mehta S. Modern surgical treatment of aneurysmal bone cyst of the spine in children and adolescents. Scoliosis Research Society. Miami, FL, Oct 27-30, 2005

**Podium**

Auerbach J, Buck D, **Garg S**, Simon S, Sutton L, Sponseller P, Dormans JP. Fusion can prevent spinal deformity following surgical excision of Intramedullary. Spinal cord tumors in children. Scoliosis Research Society. Miami FL, Oct 27-30, 2005

**Podium**

**Garg S**, Dobbs MB, Porter K, Kirchoffer M. Improved brace wear compliance in children with clubfeet treated with the Ponseti method using a dynamic orthosis. Pediatric Orthopaedic Society of North America. Hollywood, FL, 2007

**Podium**

**Garg S**, Gordon JE, Schoenecker PL, Luhmann SJ, Dobbs MB. Flexible intramedullary nail fixation of pediatric diaphyseal humerus fractures. Pediatric Orthopaedic Society of North America. Hollywood, FL, 2007

**Podium**

#### **Garg S**, Porter K, Dobbs MB. **Improved compliance and reduced recurrence of clubfoot using a new dynamic foot abduction orthosis**. American Academy of Orthopaedic Surgeons. San Francisco, CA Mar 5-9, 2008

**Poster**

#### **Garg S,** Brant JA, Lenke LG, Bridwell KH, Sides BA, Keeler KA. Hemivertebra excision: comparison of circumferential vs posterior-only approaches. Scoliosis Research Society. Salt Lake City, UT, Sept 10-13, 2008.

**ePoster**

#### **Garg S,** Brant JA, Lenke LG, Bridwell KH, Sides BA, Keeler KA. Hemivertebra excision: comparison of circumferential vs posterior-only approaches. International Meeting on Advanced Spine Techniques. Hong Kong, China, July 8-11, 2008.

**ePoster**

**Garg S**, McClung A, Johnston CE. Increased rates of anchor failure can be predicted by an early onset scoliosis severity score. International Meeting on Advanced Spine Techniques. Toronto, CANADA, July 21-24, 2010

**Podium**

Anakwenze OA, Auerbach JD, Buck DW, **Garg S**, Simon SL, Sutton LN, Sponseller PD, Dormans JP. Fusion can prevent deformity following intramedullary spinal cord tumor excision in children. Eastern Orthopaedic Association Annual Meeting. Naples, FL, Oct 13-16, 2010

**Podium**

**Garg S**, McClung A, Johnston CE. Increased rates of anchor failure can be predicted by an

early onset scoliosis severity score. Kyoto, JAPAN Scoliosis Research Society. September 21 - 24, 2010

**ePoster**

#### **Garg S**, McClung A, Johnston CE. Severity classification of early-onset scoliosis. Scoliosis Research Society. Kyoto, JAPANSeptember 21-24, 2010

**ePoster**

**Garg S**, McClung A, Johnston CE. Increased rates of anchor failure can be predicted by an early onset scoliosis severity score. International Congress on Early Onset Scoliosis (ICEOS). Toronto, CANADA, November 19-20, 2010

**Podium**

**Garg S**, Weller AL, Fletcher ND, Kwon MS, Larson AN, Schiller JR, Ho CA, Copley LA. What is the morbidity rate of supracondylar elbow fractures in children? American Academy of Orthopaedic Surgery Annual Meeting. San Diego, CA, February 15-19, 2011.

**Podium**

Larson AN, Weller AL, **Garg S**, Fletcher ND, Kwon MS, Schiller JS, Ho CA. Type 2 supracondylar humerus fractures : does time to surgery matter? American Academy of Orthopaedic Surgery Annual Meeting. San Diego, CA, February 15-19, 2011.

**Podium**

Larson AN, **Garg S**, Weller A, Fletcher ND, Schiller J, Kwon M, Copley L, Ho C. Type 2 Supracondylar Fractures: Does Time to Surgery Matter?Pediatric Orthopedic Society of North America (POSNA), Montreal, CANADA, May 11-14, 2011.

**Podium**

Huh J, Baulesh DM, Judkins T, **Garg S**, Miller NH, Erickson MA: The Role of Serial Casting in Early Onset Scoliosis (EOS). Pediatric Orthopedic Society of North America (POSNA), Montreal, CANADA, May 11-14, 2011.

**Podium**

Fletcher ND, Schiller JR, **Garg S**, Weller A, Larson AN, Kwon M, Copley L, Ho, C. Increased severity of type III supracondylar humerus fractures in the pre-teen population .. Pediatric Orthopedic Society of North America (POSNA), Montreal, CANADA, May 11-14, 2011.

**ePoster**

Kwon MS, **Garg S,** Weller A, Fletcher ND, Larson AN, Schiller JR, Ho, C. Retrospective Review of Peripheral Nerve Injuries in Pediatric Supracondylar Humerus Fractures. Pediatric Orthopedic Society of North America (POSNA), Montreal, CANADA, May 11-14, 2011.

**ePoster**

Weller AL, **Garg S,** Larson AN, Fletcher ND, Schiller JR, Kwon MS, Ho C, Copley L. Management of the Pulseless Supracondylar Humerus Fracture: Is Vascular Exploration Necessary?. Pediatric Orthopedic Society of North America (POSNA), Montreal, CANADA, May 11-14, 2011.

**Poster**

McClung A, Sucato DJ, Hopkins J, **Garg S**. Inter-Observer Reliability of Measurements for Clinical Indicators of Spinal Deformity in Preoperative Adolescent Idiopathic Scoliosis. International Meeting on Advanced Spine Techniques (IMAST), Copenhagen, DENMARK, July 13-16, 2011

**ePoster**

Sucato DJ, McClung A, Saran N, Thawrani D, **Garg S,**  Schiller JR. Ten Year Outcome of Patients Following Initial AIS Surgery: A Comparison of Single Surgery and Revision Surgery Patients. Scoliosis Research Society, Louisville, KY, September 14-17, 2011

**Podium**

Fletcher ND, Schiller JR, **Garg S,** Weller A, Larson AN, Kwon MS, Copley L, Ho, C. Increased severity of type III supracondylar humerus fractures in the pre-teen population . Orthopaedic Trauma Association, San Antonio, TX, October 12-15,2011

**Poster**

Weller AL, **Garg S,** Larson AN, Fletcher ND, Schiller JR, Kwon M, Ho C, Copley L. Management of the Pulseless Supracondylar Humerus Fracture: Is Vascular Exploration Necessary? Orthopaedic Trauma Association, San Antonio, TX, October 12-15,2011

**Podium**

Larson AN, **Garg S**, Weller AL, Fletcher ND, Schiller JR, Kwon M, Copley L, Ho, C. Type 2 Supracondylar Fractures: Does Time to Surgery Matter?Orthopaedic Trauma Association, San Antonio, TX, October 12-15,2011

**Podium**

Huh J, Baulesh DM, Judkins T, **Garg S**, Miller NH, Erickson MA. The Role of Serial Casting in Early Onset Scoliosis. International Congress on Early Onset Scoliosis (ICEOS). Orlando, FL, November 18-19, 2011

**Podium**

Sucato DJ, McClung A, **Garg S,** Schiller JR, Saran N, Thawrani D. 10 Year Outcome of patients following initial AIS surgery: Comparison of single surgery and revision surgery. Pediatric Orthopaedic Society of North America. Denver, CO May 16-19, 2012

**Podium**

LaGreca J, Hotchkiss M, **Garg S**, Messacar K, Nyquist A, Carry P, Erickson MA. Bacteriology and risk factors for development of late (greater than one year) deep infection following spinal fusion with instrumentation. Pediatric Orthopaedic Society of North America. Denver, CO May 16-19, 2012

**Podium**

Weller A, **Garg S**, Larson AN, Fletcher ND, Schiller JR, Kwon M, Copley L, Ho C. Management of the pediatric pulseless supracondylar humerus fracture: Is vascular exploration necessary? American Orthopaedic Association, Washington, DC, June 27-30, 2012.

**Podium**

Asghar J, Joshi AP, Pahys JM, Shufflebarger HL, Uschold TD, St Hilaire T, **Garg S**, Betz RR, d’Amato CR, Vitale MG, Flynn JM, Smith JT, Samdani AF. VEPTR Graduates: Definitive fusion of patients treated with VEPTR at an early age. International Meeting on Advanced Spine Techniques (IMAST). Istanbul, TURKEY, July 18-21, 2012.

**Podium**

LaGreca J, Hotchkiss M, **Garg S**, Erickson MA. Management of delayed (greater than one year) deep infection after spinal fusion. Scoliosis Research Society. Chicago, IL September 5-8, 2012.

**Podium**

Mansour A, Ballard R, **Garg S**, Baulesh D, Erickson MA. The use of barbed sutures during scoliosis fusion wound closure: A quality improvement analysis. Scoliosis Research Society. Chicago, IL, September 5-8, 2012

**ePoster**

Vitale MG, McCalla DJ, Matsumoto H, Park HY, Kanj WW, Roye D, Betz RR, Cahill PJ, Glotzbecker MP, Luhmann SJ, **Garg S**, Sawyer JR, Smith JT, Flynn JM. The classification for early onset scoliosis (C-EOS) predicts timing of VEPTR anchor failure. International Congress on Early Onset Scoliosis (ICEOS). Dublin, IRELAND, November 15-16, 2012

**Podium**

**Garg S,** Engelmann GH, Yoshihara H, McNair B, Chang FM. The relationship of GMFCS level and hip subluxation on the progression of scoliosis in children with cerebral palsy. American Academy of Orthopaedic Surgery Annual Meeting. Chicago, IL, March 19-23, 2013.

**Podium**

**Garg S,** LaGreca J, Hotchkiss M, Messacar K, Nyquist AC, Carry P, Erickson MA. Bacteriology and risk factors of late deep infection following spinal fusion with instrumentation. American Academy of Orthopaedic Surgery Annual Meeting. Chicago, IL, March 19-23, 2013.

**Podium**

**Garg S,** Holland CA, LaGreca J, McNair B, Erickson MA. Predicting failure of iliac fixation in neuromuscular spine deformity. Pediatric Orthopaedic Society of North America. Toronto, CANADA May 1-4, 2013

**Podium**

**Garg S**, Kipper E, LaGreca J, Carry P, Erickson MA. Are routine post-operative radiographs required during the first year following surgery for idiopathic scoliosis? Pediatric Orthopaedic Society of North America. Toronto, CANADA May 1-4, 2013

**Podium**

Barsi J, **Garg S**, Baulesh D, Erickson MA. Intraoperative and postoperative LIV-tilt and disc angle in patients with idiopathic scoliosis. Pediatric Orthopaedic Society of North America. Toronto, CANADA May 1-4, 2013

**Podium**

**Garg S,** Engelmann GH, Yoshihara H, McNair B, Chang FM. The relationship of GMFCS level and hip subluxation on the progression of scoliosis in children with cerebral palsy. Pediatric Orthopaedic Society of North America. Toronto, CANADA May 1-4, 2013

**ePoster**

**Garg S**, LaGreca J, St Hillaire T, Gao D, Glotzbecker M, Li Y, Smith JT, Flynn JM. Wound complications of VEPTR incisions. International Meeting on Advanced Spine Techniques (IMAST). Vancouver, CANADA July 10-13, 2013.

**Podium**

Flynn JM, Kanj W, Smith J, Cahill P, Glotzbecker M, Vitale MG, Luhmann SJ, **Garg S**, Sawyer J. The classification for early onset scoliosis (C-EOS) predicts timing of VEPTR anchor failure. American Academy of Pediatrics. Orlando, FL Oct 26-29, 2013.

**Podium**

Matsumota, H, Park H, Trupia E, Roye D, Akbarnia B, Campbell R, Flynn JM, **Garg S**, Sanders J, Smith JT, Yaszay B, Vitale MG. Criterion validity test-retest reliability and internal consistency reliability of the early onset scoliosis 24 item questionnaire (EOSQ-24). International Congress on Early Onset Scoliosis (ICEOS). San Diego, CA, November 21-22, 2013.

**Podium**

Glotzbecker M, **Garg S**, Akbarnia BA, Vitale MG, St Hilaire T, Joshi A. Surgeon practices regarding infection prevention for growth friendly spinal procedures. International Congress on Early Onset Scoliosis (ICEOS). San Diego, CA, November 21-22, 2013.

**Podium**

**Garg S**, LaGreca J, St Hilaire T, Gao D, Glotzbecker M, Li Y, Smith JT, Flynn JM. Wound complications of VEPTR incisions. International Congress on Early Onset Scoliosis (ICEOS). San Diego, CA, November 21-22, 2013.

**Podium**

Matsumoto H, Trupia E, Swindell H, Flynn T, Pawelek J, **Garg S**, Glotzbecker M, Roye D, Sanders J, Sturm P, Vitale MG. Quality of life and burden of care in patients with early onset scoliosis (EOS) undergoing casting. International Congress on Early Onset Scoliosis (ICEOS). San Diego, CA, November 21-22, 2013.

**Podium**

**Garg S,** Holland CA, LaGreca J, McNair B, Erickson, MA. Predicting failure of iliac fixation in neuromuscular spine deformity. American Academy of Orthopaedic Surgeons Annual Meeting (AAOS). New Orleans, LA, March 11-15, 2014.

**Podium**

**Garg S**, Kipper EA, LaGreca J, Carry P, Erickson MA. Are routine post-operative radiographs required during the first year following spinal surgery for idiopathic scoliosis? American Academy of Orthopaedic Surgeons Annual Meeting (AAOS). New Orleans, LA, March 11-15, 2014.

**Poster**

Wimberly RL, Riccio AI, Muchow RD, Ho CA, **Garg S**. Neurologic and vascular injury associated with supracondylar humerus fractures and ipsilateral forearm fractures in children. European Pediatric Orthopaedic Society (EPOS). Bruges, BELGIUM, April 2-5, 2014.

**Podium**

**Garg S,** Erickson MA, Caprio B, Niswander CR, Pan Z, Emans JB. A prospectively collected multi-center cohort analysis of anterior vs posterior spinal fusion for Lenke 5 (thoracolumbar/lumbar) adolescent idiopathic scoliosis. Pediatric Orthopaedic Society of North America (POSNA). Hollywood, CA, April 30-May 4, 2014.

**Podium**

**Garg S**, Niswander CR, Pan Z, Erickson MA. Do crosslinks improve clinical or radiographic outcomes of posterior spinal fusion with pedicle screws in adolescent idiopathic scoliosis? A multi-center cohort study. Pediatric Orthopaedic Society of North America (POSNA). Hollywood, CA, April 30-May 4, 2014.

**Podium**

Pohlman A, McCarthy JJ, Goodwin R, Kolmodin J, **Garg S**, Sankar WN, Franklin C. Complication rates following bone morphogenetic protein use in children: A multi-center study. Pediatric Orthopaedic Society of North America (POSNA). Hollywood, CA, April 30-May 4, 2014.

**Podium**

**Garg S**, Cyr M, Glotzbecker M, Carry P, Smith J, Sawyer J, Pahys J, Luhmann S, Flynn J, El-Hawary R, Vitale M, St. Hilaire T, Childrens Spine Study Group. A multicenter retrospective cohort analysis of infection characteristics and rates with VEPTR surgery: 2007 to present. Pediatric Orthopaedic Society of North America (POSNA). Hollywood, CA, April 30-May 4, 2014.

**ePoster**

Robertson D, Carollo J, Niswander C, **Garg S**. Novel use of motion capture reveals variability in routine clinical measures of scoliosis. Gait & Clinical Movement Analysis Society. Newark, DE, June 24-27, 2014.

**Poster**

**Garg S**, Cyr M, Glotzbecker M, Carry P, Smith J, Sawyer J, Pahys J, Luhmann S, Flynn J, El-Hawary R, Vitale M, St. Hilaire T, Childrens Spine Study Group. A multicenter retrospective cohort analysis of infection characteristics and rates with VEPTR surgery: 2007 to present. International Meeting on Advanced Spine Techniques (IMAST). Valencia, SPAIN July 16-19, 2014.

**Podium**

Vitale MG, Sullivan M, Trupia E, Matsumoto H, **Garg S**, Flynn J, Sturm PF, Perez-Grueso FS, Childrens Spine Study Group, Growing Spine Study Group, Roye DP. Prospective study comparing the effects of proximal rib anchors versus proximal spine anchors: Examining complications, curve correction, and quality of life. International Congress on Early Onset Scoliosis. Warsaw, POLAND November 20-21, 2014.

**Podium**

**Garg S**, Cyr M, Glotzbecker M, Carry P, Smith JT, Sawyer J, Pahys J, Luhmann S, Flynn JM, El-Hawary R, Vitale MG, St Hilaire T, Childrens Spine Study Group. A multi-center retrospective cohort analysis of infection characteristics and rates with VEPTR surgery: A retrospective cohort analysis. International Congress on Early Onset Scoliosis. Warsaw, POLAND November 20-21, 2014.

**Podium**

Robertson D, Carollo J, Niswander CR, **Garg S**. Variability of standing position in operative adolescent idiopathic scoliosis: A motion capture analysis. American Academy of Orthopaedic Surgeons Annual Meeting (AAOS). Las Vegas, NV, March 24-28, 2015.

**Poster**

**Garg S**, Cyr M, Glotzbecker MP, Carry P, Smith JT, Sawyer JR, Pahys JM, St Hilaire T, Childrens Spine Study Group. Variability of surgical site with VEPTR at eight centers: A retrospective cohort analysis. American Academy of Orthopaedic Surgeons Annual Meeting (AAOS). Las Vegas, NV, March 24-28, 2015.

**Poster**

**Garg S**, Niswander CR, Pan Z, Erickson MA. Do crosslinks improve outcomes of posterior spinal fusion in adolescent idiopathic scoliosis? American Academy of Orthopaedic Surgeons Annual Meeting (AAOS). Las Vegas, NV, March 24-28, 2015.

**Podium**

Erickson MA, Niswander CR, **Garg S**, Caprio B, Pan Z, Emans JB. An analysis of anterior vs. posterior spinal fusion for Lenke 5 adolescent idiopathic scoliosis. American Academy of Orthopaedic Surgeons Annual Meeting (AAOS). Las Vegas, NV, March 24-28, 2015.

**Podium**

Vandenburg CD, Niswander CR, Carry P, Pan Z, Erickson MA, **Garg S**. Antibiotic compliance decreases infection rates in pediatric spine surgery: A retrospective case-control study. American Academy of Orthopaedic Surgeons Annual Meeting (AAOS). Las Vegas, NV, March 24-28, 2015.

**Podium**

LaGreca J, Flynn T, Cahill PJ, Samdani A, Vitale MG, El-Hawary R, Smith JT, Phillips JH, Flynn JM, Glotzbecker MP, **Garg S**. Patients without intraoperative neuromonitoring (IONM) alerts during VEPTR implantation did not sustain neurologic injury during subsequent routine expansions: A retrospective multi-center cohort study. Pediatric Orthopaedic Society of North America. Atlanta, GA, April 29-May 2, 2015.

**Podium**

Vandenburg CD, Niswander CR, Carry P, Pan Z, Erickson MA, **Garg S**. Antibiotic compliance decreases infection rates in pediatric spine surgery: A retrospective case-control study. Pediatric Orthopaedic Society of North America. Atlanta, GA, April 29-May 2, 2015.

**Podium**

Ramo BA, Tran D, **Garg S**, Erickson MA, Reddy A, Niswander CR, Brown K. Delay to surgery greater than 6 months leads to significant deformity progression in Risser 0, pre-menarchal adolescent idiopathic scoliosis (AIS) patients: A retrospective cohort study. Pediatric Orthopaedic Society of North America. Atlanta, GA, April 29-May 2, 2015.

**Podium**

Cyr M, St. Hilaire T, Pan Z, Thompson GH, Childrens Spine Study Group, Growing Spine Study Group, **Garg S**. Classification of early onset scoliosis has almost perfect inter and intra-observer reliability. Pediatric Orthopaedic Society of North America. Atlanta, GA, April 29-May 2, 2015.

**Poster**

Vitale MG, Sullivan MP, Trupia EP, Matsumoto H, **Garg S**, Flynn JM, Sturm PF, Perez-Grueso FS, Childrens Spine Study Group, Growing Spine Study Group, Roye DP, Skaggs DL. VEPTR versus traditional growing rods: preliminary results from a collaboration between two national databases. Pediatric Orthopaedic Society of North America. Atlanta, GA, April 29-May 2, 2015.

**ePoster**

Robertson DM, Carollo J, Niswander CR, **Garg S**. There is variability of patient standing position in operative adolescent idiopathic scoliosis (AIS) patients: A motion capture analysis. Pediatric Orthopaedic Society of North America. Atlanta, GA, April 29-May 2, 2015.

**ePoster**

Cyr M, Cahill PJ, Tong S, St Hilaire T, Harms Study Group, Childrens Spine Study Group, **Garg S**. Comparison of deformity correction and complications with VEPTR and early primary posterior spinal fusion in young children with idiopathic scoliosis: a retrospective matched cohort analysis. Pediatric Orthopaedic Society of North America. Atlanta, GA, April 29-May 2, 2015.

**ePoster**

Cyr M, St Hilaire T, Pan Z, Thompson GH, Childrens Spine Study Group, Growing Spine Study Group, **Garg S**. Classification of early onset scoliosis (C-EOS) has almost perfect inter and intra observer reliability. International Meeting on Advanced Spine Techniques (IMAST). Kuala Lumpur, MALAYSIA, July 8-11, 2015.

**Podium**

LaGreca J, Cyr M, Flynn T, Cahill PJ, Samdani AF, Vitale MG, El-Hawary R, Smith JT, Phillips JH, Flynn JM, Glotzbecker MP, **Garg S**. Patients without intraoperative neuromonitoring (IONM) alerts during implantation of rib based growing constructs did not sustain neurologic injury during subsequent routine expansions. International Meeting on Advanced Spine Techniques (IMAST). Kuala Lumpur, MALAYSIA, July 8-11, 2015.

**Podium**

Cyr M, Cahill PJ, Tong S, St Hilaire T, Harms Study Group, Children’s Spine Study Group, **Garg S**. Both rib based growing surgery and early primary posterior spinal fusion (PSF) control idiopathic scoliosis (IS) in young children. International Meeting on Advanced Spine Techniques (IMAST). Kuala Lumpur, MALAYSIA, July 8-11, 2015.

**Podium**

Gomez JA, Grzywna A, Miller P, Karlin LI, Emans JB, **Garg S**, Sanders JO, Sponseller PD, D’Astous JL, Glotzbecker MP, Children’s Spine Study Group, Growing Spine Study Group, Cyr M. Does initial cast correction predict treatment success for infantile scoliosis? International Meeting on Advanced Spine Techniques (IMAST). Kuala Lumpur, MALAYSIA, July 8-11, 2015.

**Podium**

Russo C, Feinberg N, Trupia E, Matsumoto H, Smith J, Samdani A, **Garg S**, Flynn J, Vitale M, Children’s Spine Study Group, Growing Spine Study Group. Classification of early onset scoliosis predicts complications after initiation of growth friendly spine surgery. International Congress on Early Onset Scoliosis. Boston, MA, November 19-20, 2015.

**Podium**

Gomez JA, Grzywna A, Miller PE, Karlin LI, Emans JB, **Garg S**, Sanders JO, Sponseller PD, D’Astous JL, Glotzbecker MP, Children’s Spine Study Group, Growing Spine Study Group. Does initial cast correction predict treatment success for infantile scoliosis? International Congress on Early Onset Scoliosis. Boston, MA, November 19-20, 2015.

**Podium**

Vitale MG, Matsumoto H, Feinberg N, Maier S, Trupia EP, Warren S, Shirley M, **Garg S**, Flynn J, Sturm PF, Perez-Grueso FS, Roye DP, Skaggs DL, Children’s Spine Study Group, Growing Spine Study Group. Proximal rib vs proximal spine anchors in growing rods: A multicenter prospective cohort study. International Congress on Early Onset Scoliosis. Boston, MA, November 19-20, 2015.

**Podium**

Nossov S, Campbell RM, Mayer OH, Smith JT, **Garg S**, Flynn JM, Cahill PJ, Children’s Spine Study Group. Are we reducing respiratory assistance requirements at two years? International Congress on Early Onset Scoliosis. Boston, MA, November 19-20, 2015.

**Podium**

Brandon R, Tran DP, **Garg S**, Erickson M, Rathjen K,Reddy A, Niswander C , Brown K, Jo C.

Impact of Delay to Surgery Greater than 6 Months on Deformity in Adolescent Idiopathic Scoliosis Patients. American Academy of Orthopaedic Surgeons Annual Meeting (AAOS). Orlando, FL, March 1-5, 2016.

**Podium**

Russo CM, Matsumoto H, Feinberg NA, Smith JT, Samdani A, **Garg S**, Flynn JM, Vitale MG. Classification of Early Onset Scoliosis Predicts Complications after Initiation of Growth Friendly Spine Surgery. American Academy of Orthopaedic Surgeons Annual Meeting (AAOS). Orlando, FL, March 1-5, 2016.

**Podium**

Roaten JD, Sawyer JR, Yellin, JL, Flynn JM, **Garg S**, Cyr M, Andras LM, Broom AM. Pediatric Femur Fracture Treatment: A Multicenter Review of the Pre and Post 2009 AAOS Clinical Practice Guidelines. American Academy of Orthopaedic Surgeons Annual Meeting (AAOS). Orlando, FL, March 1-5, 2016.

**Podium**

Russo CM, Feinberg N, Trupia E, Matsumoto H, Smith JT, Samdani AF, **Garg S**, Flynn JM, Vitale MG, Children’s Spine Study Group, Growing Spine Study Group**.** Classification of early onset scoliosis predicts complications after initiation of growth friendly spine surgery. Pediatric Orthopaedic Society of North America. Indianapolis, IN, April 27-30, 2016.

**Podium**

Roaten JD, Sawyer JR, Yellin JL, Flynn JM, Cyr M, **Garg S**, Broom AM, Andras L. Pediatric Femur Fracture Management: A Multicenter Analysis of the Trends Pre and Post 2009 AAOS Clinical Practice Guidelines. Pediatric Orthopaedic Society of North America. Indianapolis, IN, April 27-30, 2016.

**Podium**

Ramo B, Tran DP, **Garg S**, Erickson MA, Reddy A, Brown K. Delay to Surgery and Deformity Progression Leads to Increased Levels of Fusion in Risser 0, Premenarchal Adolescent Idiopathic Scoliosis (AIS) Patients: A Retrospective Cohort Study. Pediatric Orthopaedic Society of North America. Indianapolis, IN, April 27-30, 2016.

**Podium**

Russo CM, Feinberg N, Trupia E, Matsumoto H, Smith JT, Samdani AF, **Garg S**, Flynn JM, Vitale MG, Children’s Spine Study Group, Growing Spine Study Group. Classification of Early Onset Scoliosis Predicts Complications after Initiation of Growth Friendly Spine Surgery. Pediatric Orthopaedic Society of North America. Indianapolis, IN, April 27-30, 2016.

**Podium**

Nossov S, Campbell RM, Mayer OH, Smith JT, **Garg S**, Flynn JM, Cahill PJ, Children's Spine Study. The Impact of VEPTR Treatment on Respiratory Assistance Requirement. International Meeting on Advanced Spine Technique (IMAST). Washington, DC, USA, July 13-16, 2016.

**Podium**

Vitale MG, Matsumoto H, Feinberg N, Trupia E, Shirley M, **Garg S**, Flynn J, Sturm PF, Perez-Grueso FS, Roye Jr DP, Skaggs DL, Children’s Spine Study Group, Growing Spine Study Group. Choice of Anchors – Rib vs. Spine: Importance of Proximal Anchor Number. International Meeting on Advanced Spine Technique (IMAST). Washington, DC, USA, July 13-16, 2016.

**Podium**

Thomas J, **Garg S**, Erickson M, Michael N, Bloch N, Cohen M. Gabapentin Decreases Time to Meeting Physical Therapy Goals in Patients with Idiopathic Scoliosis Undergoing Posterior Spinal Fusion. International Meeting on Advanced Spine Technique (IMAST). Washington, DC, USA, July 13-16, 2016.

**Podium**

Nossov S, Campbell RM, Mayer OH, Smith JT, **Garg S**, Flynn JM, Cahill PJ, Children's Spine Study. The Impact of VEPTR Treatment on Respiratory Assistance Requirement. Scoliosis Research Society Annual Meeting. Prague, CZECH REPUBLIC, September 21-24, 2016.

**ePoster**

Feinberg F, Matsumoto H, Bloom Z, Flynn J, Sturm P, **Garg S**, Roye D, Vitale M, Children's Spine Study Group, Growing Spine Study Group. Spinal Muscular Atrophy; Growing Spinal Instrumentation Preserves Lung Volume and Maintains Quality of Life. Scoliosis Research Society Annual Meeting. Prague, CZECH REPUBLIC, September 21-24, 2016.

**ePoster**

**Garg S**, Michael N, Bloch N, Frey G. Benefits of 3D Modeling: A Case Study in Severe Scoliosis Associated with Osteogenesis Imperfecta. Scoliosis Research Society Annual Meeting. Prague, CZECH REPUBLIC, September 21-24, 2016.

**Podium**

Woon RW, Skaggs DL, **Garg S**, Sanders J, Sawyer J, Fletcher N, Andras LM. How precise are height measurements in scoliosis clinic? American Academy of Pediatrics Annual Meeting, San Francisco, CA, USA, October 22-25, 2016.

**Podium**

**Garg S**, Flynn J, Michael N, St. Hilaire T, Palmer C, Bloch N, Vitale M, Strum P, Erickson M, Study Group CS. Rib Based Distraction 76% Successful Managing Spinal Muscular Atrophy (SMA) Scoliosis: A Prospective Study. International Congress on Early Onset Scoliosis (ICEOS). Utrecht, Holland, November 17-18, 2016.

**ePoster**

Michael N, Smith J, St. Hilaire T, Palmer C, Cyr M, Morgan J, Heagy V, Bloch N, Erickson MA, Study Group CS, **Garg S**. Complication Classification for Growing Spine Surgery has Strong Observer Agreement. International Congress on Early Onset Scoliosis (ICEOS). Utrecht, Holland, November 17-18, 2016.

**ePoster**

Auran E, Matsumoto H, Roye DP, Vitale MG, Sturm PF, Sanders PO, Oetgen M, **Garg S**, Children's Spine Study Group, Growing Spine Study Group. Quality of Life and Burden of Care in Patients with EOS Undergoing Casting. Utrecht, Holland, November 17-18, 2016.

**Podium**

O’Donnell C, Bloch N, Neustein T, Palmer C, Michael N, Fletcher N, Erickson M, **Garg S**. Closed-suction Drains Do Not Reduce Wound Complications after Posterior Spine Fusion. American Academy of Orthopaedic Surgeons Annual Meeting. San Diego, CA. March 14-18, 2017.

**Poster**

Michael N, Smith J, St. Hilaire T, Palmer C, Cyr M, Morgan J, Heagy V, Bloch N, Erickson MA, Study Group CS, **Garg S**. Complication Classification for Growing Spine Surgery has Strong Observer Agreement. Safety in Spine Surgery Summit. New York City, New York, February 10, 2017.

**ePoster**

**Garg S**, Bloch N, Potter M, Palmer C, Michael N, O’Donnell C, Erickson MA. Topical Vancomycin in Pediatric Spine Surgery Does Not Reduce Surgical Site Infection: A Retrospective Cohort Study. Safety in Spine Surgery Summit. New York City, New York, February 10, 2017.

**ePoster**

**Garg S**, Bloch N, Potter M, Palmer C, Michael N, O’Donnell C, Erickson MA. Topical Vancomycin in Pediatric Spine Surgery Does Not Reduce Surgical Site Infection: A Retrospective Cohort Study. EPOS/POSNA Combined Annual Meeting. Barcelona, Spain, May 3, 2017.

**Podium**

Michael N, Smith J, St. Hilaire T, Palmer C, Cyr M, Morgan J, Heagy V, Bloch N, Erickson MA, Study Group CS, **Garg S**. Complication Classification for Growing Spine Surgery has Strong Observer Agreement. EPOS/POSNA Combined Annual Meeting. Barcelona, Spain, May 3, 2017.

**ePoster**

Flynn J, DeFrancesco C, Smith J, Luhmann S, Sawyer J, Glotzbecker M, Pahys J, **Garg S**, Vitale M, Farrington D, Sturm P, Sanders J, Morgan J, Sze C, Flournory M, Davis E, The Children's Spine Study Group. Adverse Reactions to Intra-Wound Vancomycin Powder in Early Onset Scoliosis: A Multicenter Study of 1398 Children ≤ 12 Years Old. EPOS/POSNA Combined Annual Meeting. Barcelona, Spain, May 3, 2017.

**Poster**

Olivella G, Rodriguez O, Marrero P, Smith J, **Garg S**, Vitale M, Betz R, Study Group CS. Spasticity is a Risk factor of Complications and Surgical Outcome in the Management of Early-Onset Neuromuscular Scoliosis with a Rib-Based Growing System. 15th International Philip Zorab Symposium. London, England, June 15, 2017.

**Podium**

Samdani A, Lenke L, Sponseller P, Lonner B, Gupta M, **Garg S**, Park J, Boachie-Adjei O, Pahys J, Hwang s. Does the Presence of an Intraspinal Anomaly Increase Neurologic Complications and Lessen the Correction Rate in Severe Pediatric Spinal Deformity? International Meeting on Advanced Spine Techniques (IMAST). Cape Town, South Africa, July 14, 2017.

**Podium**

Gupta M, Lenke L, Asghar J, Boachie-Adjei O, Cahill P, Erickson M, **Garg S**, Newton P, Samdani A, Shah S, Sufflebarger H, Sides B, Sponseller P, Sucato D, Kelly M. Rate of Instrumentation and Fusion-related Complications after Surgical Treatment for Severe Pediatric Spinal Deformity within 2 years: A Prospective Multi-center Cohort Study. International Meeting on Advanced Spine Techniques (IMAST). Cape Town, South Africa, July 13, 2017.

**Podium**

Kondratyeva A, Feinberg N, Bloom Z, Hung C, Matsumoto J, Smith J, Payhs J, **Garg S**, Roye D, Vitale M, Study Group CS. Proximal Rib-Based Constructs in Early Onset Scoliosis Survivorship at or near Skeletal Maturity. International Meeting on Advanced Spine Techniques (IMAST). Cape Town, South Africa, July 13, 2017.

**Podium**

Matsumoto H, Auran E, Chun H, Sturm P, **Garg S**, Sanders J, Oetgen M, Roye D, Vitale M, Study Group CS, Study Group GS. All that Glitters is Not Gold - Serial Casting for EOS Negatively Affects Health-Related Quality of Life even after Discontinuation of Serial Casting: A 2 Year Follow-up. Scoliosis Research Society Annual Meeting. Philadelphia, Pennsylvania, September 9, 2017.

**Podium**

Kondratyeva A, Feinberg N, Bloom Z, Chun H, Matsumoto J, Smith J, Payhs J, **Garg S**, Roye D, Vitale M, Study Group CS. Proximal Rib-Based Constructs in Early Onset Scoliosis: Survivorship at or near Skeletal Maturity. Scoliosis Research Society Annual Meeting. Philadelphia, Pennsylvania, September 6-9, 2017.

**ePoster**

Ramirez-Lluch N, Olivella F, Rodriquez O, Marrero P, **Garg S**, Smith J, Vitale M, Betz R, Study Group CS. Spasticity is a Risk factor of Complications and Surgical Outcome in the Management of Neuromuscular Early-Onset Scoliosis (EOS) with a Rib-Based Growing System (RBGS). Scoliosis Research Society Annual Meeting. Philadelphia, Pennsylvania, September 6-9, 2017.

**ePoster**

Nossov S, Wiesman K, Gaughan J, Campbell R, Smith J, **Garg S**, Glozbecker M, Pahys J, Samdani A, Flynn J, Mayer O, Cahill P. Worsening Assisted Ventilator Rating (AVR) Correlates with Decreased Scores on Early Onset Scoliosis Quality of Life (EOSQ) in Patients Treated with Rib Based Growing Systems (RBGS): A Prospective Cohort Study. Scoliosis Research Society Annual Meeting. Philadelphia, Pennsylvania, September 6-9, 2017.

**ePoster**

Gupta M, Lenke L, Asghar J, Boachie-Adjei O, Cahill P, Erickson M, **Garg S**, Newton P, Samdani A, Shah S, Shufflebarger H, Sides B, Sponseller P, Sucato D, Kelly M. High Rate of Intraoperative Monitoring (IOM) Alerts in 176 Severe Pediatric Deformity Patients and its Relationship to the Deformity Angularity Ratio (DAR). Scoliosis Research Society Annual Meeting. Philadelphia, Pennsylvania, September 6-9, 2017.

**ePoster**

Blumberg T, Nelson S, **Garg S**, Erickson M, Samdani A, Yaszay B, Gupta M, Lenke L, Cahill P. Who Gets Staged Surgery in Severe Pediatric Spinal Deformity? Scoliosis Research Society Annual Meeting. Philadelphia, Pennsylvania, September 6-9, 2017.

**ePoster**

Blumberg T, Nelson S, **Garg S**, Erickson M, Samdani A, Yaszay B, Gupta M, Lenke L, Cahill P. Pre-operative Halo-Gravity Traction: Can it Replace a Vertebral Column Resection? Scoliosis Research Society Annual Meeting. Philadelphia, Pennsylvania, September 6-9, 2017.

**ePoster**

Lenke L, Gupta M, Sides B, Sponseller P, Sucato D, Shah S, Samdani A, Yaszay B, **Garg S**, Boachie-Adjei O, Kelly M. Perioperative Complications after Vertebral Column Resection (VCR) for Severe Pediatric Spinal Deformity. Scoliosis Research Society Annual Meeting. Philadelphia, Pennsylvania, September 9, 2017.

**Podium**

Nielsen E, Andras L, Michael N, **Garg S**, Paloski M, Brighton B, Skaggs D. Surgical Treatment of Spondylolisthesis in Adolescents Has a 47% Re-operation Rate: A Multi-Center Retrospective Cohort Study. Scoliosis Research Society Annual Meeting. Philadelphia, Pennsylvania, September 9, 2017.

**Podium**

Michael N, Carry P, Erickson M, Bloch N, Gibbon S, O’Donnell C, **Garg S**. Spine and Thoracic Length Measurements have Excellent Reliability in Patients with Early Onset Scoliosis. Scoliosis Research Society Annual Meeting. Philadelphia, Pennsylvania, September 6-9, 2017.

**ePoster**

**Garg S**, Bloch N, Carry P, Erickson M, Cahill P, Samdani A, Yaszay B, Lenke L, Sides B, Gupta M. Planned staged surgery for severe pediatric spinal deformity does not reduce complications within 90 days of surgery: A prospective matched cohort study. Scoliosis Research Society Annual Meeting. Philadelphia, Pennsylvania, September 6-9, 2017.

**ePoster**

**Garg S**, Bloch N, Potter M, Palmer C, Michael N, O’Donnell C, Erickson MA. Topical Vancomycin in Pediatric Spine Surgery Does Not Reduce Surgical Site Infection: A Retrospective Cohort Study. Scoliosis Research Society Annual Meeting. Philadelphia, Pennsylvania, September 9, 2017.

**Podium**

Gupta M, Lenke L, Asghar J, Boachie-Adjei O, Cahill P, Erickson M, **Garg S**, Newton P, Samdani A, Shah S, Shufflebarger H, Sides B, Sponseller P, Sucato D, Kelly M. High Rate of Intraoperative Monitoring (IOM) Alerts in 176 Severe Pediatric Deformity Patients and its Relationship to the Deformity Angularity Ratio (DAR). North American Spine Society (NASS). Orlando, Florida, October 25, 2017.

**Podium**

Nielsen E, Andras L, Michael N, **Garg S**, Paloski M, Brighton B, Ferrero E, Ilharreborde B, Skaggs D. Surgical Treatment of Spondylolisthesis in Adolescents Has a 46% Re-operation Rate: A Multi-Center Retrospective Cohort Study. American Academy of Pediatrics (AAP) National Conference & Exhibition. Chicago, Illinois, September 16, 2017.

**Podium**

White K, Viviana B, Ramirez N, Varakitsomboon S, **Garg S**, Redding G, Krengel W. Classification of Early Onset Scoliosis (C-EOS) and Pulmonary Function Outcomes. 11th International Congress on Early Onset Scoliosis (ICEOS) San Diego, California, November 16-17, 2017.

**Podium**

McClung A, Mundis G, Pawelek J, **Garg S**, Yaszay B, Boachie-Adjei O, Sanders J.O., Sponseller P, Pérez-Grueso F, Lavelle W, Emans J, Johnston C, Akbarnia B, Children’s Spine Study Group, Growing Spine Study Group. Utilization and Reliability of Intraoperative Neuromonitoring in Vertebral Column Resections for Severe Early-Onset Scoliosis. 11th International Congress on Early Onset Scoliosis (ICEOS) San Diego, California, November 16-17, 2017.

**Podium**

McClung A, Mundis G, Pawelek J, Kabirian N, **Garg S**, Yaszay B, Boachie-Adjei O, Sanders J.O., Sponseller P, Pérez-Grueso F, Lavelle W, Emans J, Johnston C, Akbarnia B, Children’s Spine Study Group, Growing Spine Study Group. Vertebral Column Resection for Early-Onset Scoliosis: Indications, Utilization and Outcomes. 11th International Congress on Early Onset Scoliosis (ICEOS) San Diego, California, November 16-17, 2017.

**Podium**

Matsumoto H, Campbell M, Minkara A, Roye DP, **Garg S**, Johnston J, Samdani A, Smith J, Sponseller P, Sturm PF, Vitale M, Children’s Spine Study Group, Growing Spine Study Group. Development of a Risk Severity Score (RSS) Predicting Surgical Site Infection in Early Onset Scoliosis: Identifying High-Risk Patients. 11th International Congress on Early Onset Scoliosis (ICEOS) San Diego, California, November 16-17, 2017.

**Podium**

Santana GO, Ramirez-Lluch N, Rodriguez O, Marrero P, Vitale M, Smith J, **Garg S**, Betz RR, Children’s Spine Study Group. Spasticity is a Risk factor of Complications and Surgical Outcome in the Management of Early-Onset Neuromuscular Scoliosis with a Rib-Based Growing System. 11th International Congress on Early Onset Scoliosis (ICEOS) San Diego, California, November 16-17, 2017.

**Podium**

White K, Bompadre V, Redding G, **Garg S**, Ramirez-Lluch N, Varakitsomboon S, Krengel III W. Classification of Early Onset Scoliosis and Pulmonary Function Outcomes. American Academy of Orthopaedic Surgeons Annual Meeting (AAOS). New Orleans, LA, March 6-10, 2018.

**Poster**

Nielsen E, Andras L, Michael N, **Garg S**, Paloski M, Brighton B, Ferrero E, Mazda K, Ilharreborde N, Skaggs D. Surgical Treatment of Spondylolisthesis in Adolescents has a 46% Re-Operation Rate: A Multi-Center Retrospective Cohort Study. American Academy of Orthopaedic Surgeons Annual Meeting (AAOS). New Orleans, LA, March 6-10, 2018.

**Poster**

Gupta M, Lenke L, Boachie-Adjei O, Erickson M, Sponseller P, Sides B, Yanik E, Kelly M, Cahill P, Asghar J, Newton P, Samdani A, Shah S, Shufflebarger H, Sucato D, Sturm P, **Garg S**, Jain V, Skaggs D, Yaszay B, Kim HJ, Pahys J, McCarthy R, Bumpass D, Polly Jr D, Emans J, Lonner B. Rate of Instrumentation and Fusion-Related Complications within 2 Years after Surgical Treatment for Severe Pediatric Spinal Deformity: A Prospective Multi-Center Cohort Study. American Academy of Orthopaedic Surgeons Annual Meeting (AAOS). New Orleans, LA, March 6-10, 2018.

**Podium**

Nielson E, Andras L, Michael N, **Garg S**, Paloski M, Brighton B, Ferrero E, Mazda K, Ilharreborde B, Skaggs D. 46% Reoperation Rate in Adolescents with Spondylolisthesis. Pediatric Orthopaedic Society of North America. Austin, TX, May 9-12, 2018.

**Podium**

Gomez J, Hanstein R, Schulz J, St. Hilaire T, White K, El-Hawary R, **Garg S**, Cahill P, Vitale M, Redding G. Comparison of Deformity Correction and Complications with Growth-Friendly and Early Primary Posterior Spinal Fusion in 8-11 Year Old Children with Scoliosis. Pediatric Orthopaedic Society of North America. Austin, TX, May 9-12, 2018.

**Podium**

**Garg S**, Bloch N, Carry P, Erickson M, Cahill P, Samdani A, Yaszay B, Lenke L, Sides B, Gupta M. Planned Staged Surgery for Severe Pediatric Spinal Deformity Does Not Reduce Complications Within 90 Days of Surgery: A Prospective Matched Cohort Study. Pediatric Orthopaedic Society of North America. Austin, TX, May 9-12, 2018.

**ePoster**

Tan GM, Austin T, **Garg S**, Cohen M. A multimodal approach reduced allogeneic blood transfusions by over 50% in pediatric posterior spinal fusion (PSF) surgeries. Society for the Advancement of Blood Management Annual Meeting. San Antonio TX, Sept 12-15, 2018.

**Poster**

Sethi K, **Garg S**, Leveque JC, DeWitt J, Schulz J, Frey G, Tuason D, Doan N, Nold K, Senz A. 3D Printed Patient Specific Drill Guides for Pedicle Screw Insertion: A Retrospective Cohort Study. Scoliosis Research Society. Bologna, Italy, October 10-13, 2018.

**Podium**

McClung A, Mundis GM, Pawelek J, **Garg S**, Yaszay B, Boachie-Adjei O, Sanders JO, Sponseller PD, Perez-Grueso FJ, Lavelle WF, Emans JB, Johnston CJ, Akbarnia BA, Children’s Spine Study Group, Growing Spine Study Group. Vertebral column resection for early-onset scoliosis: Indications, utilization and outcome / Utilization and reliability of intraoperative neuromonitoring in vertebral column resection for severe early onset scoliosis. Scoliosis Research Society. Bologna, Italy, October 10-13, 2018.

**Podium**

Gomez G, Hanstein R, Lo Y, St. Hilaire, T, Flynn T, White K, El-Hawary R, **Garg S**, Cahill P, Vitale M, Redding G. Single fusion vs growth friendly device in older EOS patients. How do outcomes compare? American Academy of Pediatrics. Orlando, FL, November 2-6, 2018.

**Podium**

Murphy R, Pahys J, **Garg S**, Barfield W, St Hilaire T, Emans J, Samdani A, Smith J, Sawyer J. Analysis of surgeon decisions to discontinue a lengthening program in early onset scoliosis. International Congress on Early Onset Scoliosis. Lisbon, PORTUGAL, November 15-16, 2018.

**Podium**

Adams A, **Garg S**, Anari J, Sturm PF, Pahys J, Murphy R, Flynn J, Children’s Spine Study Group, Cahill P. Does serial casting under general anesthesia for infantile idiopathic scoliosis affect childhood behavior? A prospective investigation in response to the new FDA warning. International Congress on Early Onset Scoliosis. Lisbon, PORTUGAL, November 15-16, 2018.

**Podium**

Gomez J, Xin R, Lo Y, Hanstein R, St Hilaire T, Flynn T, White K, El-Hawary R, **Garg S**, Cahill P, Vitale M, Redding G. Single fusion (PSF) versus growth friendly (GF) device in older EOS patients. International Congress on Early Onset Scoliosis. Lisbon, PORTUGAL, November 15-16, 2018.

**Podium**

Ramirez N, Olivella G, Rodriguez O, Marrero P, Smith J, **Garg S**, Vitale M, Betz R, Children’s Spine Study Group. Repeated lengthening of rib to pelvis distraction devices in neuromuscular early onset scoliosis patients show limited spinal alignment correction. International Congress on Early Onset Scoliosis. Lisbon, PORTUGAL, November 15-16, 2018.

**ePoster**

McClung A, Mundis G, Pawelek J, Kabirian N, **Garg S**, Yaszay B, Boachie-Adjei O, Sanders J, Sponseller P, Perez-Grueso F, Lavelle W, Emans J, Johnston C, Akbarnia B, Children’s Spine Study Gropu, Growing Spine Study Group. Vertebral column resection for early onset scoliosis: Indications, utilization, and outcomes. American Academy of Orthopaedic Surgeons. Las Vegas, NV, March 12-16, 2019.

**Podium**

Calabrese D, Noschchenko A, Miller N, **Garg** S, Erickson M, Bradford A, Burger EL. Analysis of Prognostic Cell Signaling Factors in Adolescent Idiopathic Scoliosis. University of Colorado Research Symposium. Aurora, CO, May 8, 2019.

**Poster**

**Garg S**, Quick H, Thomas J, Erickson M, Carry P. Ultrasonic bone scalpel (USBS) does not reduce blood loss in adolescent idiopathic scoliosis (AIS): Randomized clinical trial. University of Colorado Research Symposium. Aurora, CO, May 8, 2019.

**Podium**

Larson AN, Polly DW, Sponseller PD, Richards BS, **Garg S**, Labelle H, Weinstein SL, Shah SA, Crawford CH, Oetgen ME, Sanders JO, Fletcher ND, Blakemore LC, Brearley AM, Erickson MA, Parent S, Aubin CE, Sucato DJ, Minimize Implants Maximize Outcomes Study Group. Prospective Randomized Controlled Trial of Implant Density in AIS: Results of the Minimize Implants Maximize Outcomes Study. Scoliosis Research Society. Montreal, CANADA September 18-21, 2019

**Podium**

Gupta MC, Lenke LG, Boachie-Adjei O, Bumpass DB, **Garg S,** Sponseller PD, Shah SA, Erickson MA, Sucato DJ, Sandani A, Yaszay B, Pahys JM, Newton PO, Sides BA, Kelly MP, Fox Pediatric Spinal Deformity Study Group. Vertebral Column Resection Improves the Sagittal Plane Greater than Other Techniques but Risks Symptomatic Junctional Kyphosis. Scoliosis Research Society. Montreal, CANADA September 18-21, 2019

**Podium**

Gupta MC, Lenke LG, Boachie-Adjei O, Bumpass D, McCarthy R, Erickson MA, **Garg S**, Newton PO, Yaszay B, Pahys JM, Shufflebarger HL, Samdani A, Sponseller PD, Sucato DJ, Shah SA, Sides BA, Kelly MP, Fox Pediatric Spinal Deformity Study Group. Surgery for Severe Pediatric Spinal Deformity has a Significant Rate of Revision: A Prospective Multicenter Cohort Study. Scoliosis Research Society. Montreal, CANADA September 18-21, 2019

**Podium**

Matsumoto H, Simhon ME, **Garg S,** Samdani AF, Smith JT, Sponseller PD, Vitale MG, Roye BD, Children’s Spine Study Group, Growing Spine Study Group. Bigger is Better: Larger Thoracic Height is Associated with Increased Health Related Quality of Life at Skeletal Maturity. Scoliosis Research Society. Montreal, CANADA September 18-21, 2019

**Podium**

Simhon M, Roye B, Matsumoto H **Garg S**, Samdani A, Smith J, Sponseller P, Vitale M, Pediatric Spine Study Group. Bigger is better: Larger thoracic height is associated with increased health related quality of life at skeletal maturity. Internal Congress on Early Onset Scoliosis. Atlanta, GA November 21-22, 2019.

**Podium**

Helenius I, Saarinen A, White K, McClung A, Yazici M, **Garg S**, Thompson G, Johnston C, Pahys J, Vitale M, Akbarnia A, Sponseller P. Similar deformity correction, but limited spinal growth and lower health related quality of life in children with skeletal dysplasia undergoing growth-friendly management for early-onset scoliosis. A matched comparison with idiopathic early onset scoliosis. Internal Congress on Early Onset Scoliosis. Atlanta, GA November 21-22, 2019.

**Podium**

Li Y, Swallow J, Gargnier J, Cahill P, Sponseller P, **Garg S**, Thompson G, Ramo B, Pediatric Spine Study Group. Comparison of single posterior spinal fusion (PSF) vs growth-friendly (GF) surgery in older neuromuscular EOS patients. Internal Congress on Early Onset Scoliosis. Atlanta, GA November 21-22, 2019.

**Podium**

Matsumoto H, Ball J, Roye BD, **Garg S**, Erickson M, Samdani A, Skaggs D, Roye DP, Vitale MG, Pediatric Spine Study Group. Uncorrected pelvic obliquity is associated with lower health related quality of life in ambulatory but not in non-ambulatory patients after surgical treatment in patients with early onset scoliosis. Internal Congress on Early Onset Scoliosis. Atlanta, GA November 21-22, 2019.

**ePoster**

**Garg S,** Larson AN, Polly D, Sponseller P, Richards B, Labelle H, Weinstein S, Shah S, Crawford C, Oetgen M, Sanders J, Fletcher N, Kelly M, Blakemore L, Erickson M, Brearley A, Aubin C, Parent S, Sucato D. Minimize implants maximize outcomes study group. Prospective Randomized Controlled Trial of Implant Density in Adolescent Idiopathic Scoliosis: Results of the Minimize Implants Maximize Outcomes Trial. American Academy of Orthopedic Surgeons. Orlando, FL March 24-28, 2020.

**Poster**

**Garg S**, Thomas J, Quick H, Carry P, Kim E, Erickson M. Ultrasonic bone scalpel (USBS) does not reduce blood loss in adolescent idiopathic scoliosis (AIS): Randomized clinical trial. American Academy of Orthopedic Surgeons. Orlando, FL March 24-28, 2020.

**Poster**

Helenius I, Saarinen A, White K, McClung A, Yazici M, **Garg S**, Thompson G, Johnston C, Pahys J, Vitale M, Akbarnia B, Sponseller P. Limited Spinal Growth and Lower Health Related Quality of Life in Children with Skeletal Dysplasia Undergoing Growth-Friendly Management for Early-Onset Scoliosis: A Matched Comparison with Idiopathic Early-Onset Scoliosis. American Academy of Orthopedic Surgeons. Orlando, FL March 24-28, 2020.

**Poster**

**Garg S,** Quick H, Sanchez B, Carry P. Magnetic resonance imaging findings in patients with presumed adolescent idiopathic scoliosis scheduled for posterior spine fusion surgery. American Academy of Orthopedic Surgeons. Orlando, FL March 24-28, 2020.

**Poster**

Gupta M, Lenke L, Boachie-Adjei O, Bumpass D, Cahill P, Emans J, Erickson M, **Garg S,** McCarthy R, Newton P, Pahys J, Samdani A, Shah S, Shufflebarger H, Sponseller P, Sucato D, Yaszay B, Sides B, Kelly M. Surgery for severe pediatric spinal deformity has a significant rate of revision: A prospective multicenter cohort study. American Academy of Orthopedic Surgeons. Orlando, FL March 24-28, 2020.

**Podium**

Roye B, Simhon M, Matsumoto H, **Garg S**, Samdani A, Smith J, Sponseller P, Vitale M, Pediatric spine study group. Bigger is better: Larger thoracic height is associated with increased health related quality of life at skeletal maturity. American Academy of Orthopedic Surgeons. Orlando, FL March 24-28, 2020.

**Podium**

Li Y, Swallow J, Gagnier J, Cahill P, Sponseller P, **Garg S**, Thompson G, Ramo B, Pediatric Spine Study Group. What’s it worth? Growth friendly surgery results in more growth but a higher complication rate and unplanned returns to the operating room compared to single fusion in juvenile neuromuscular scoliosis. Pediatric Orthopaedic Society of North America. San Diego, CA May 13-16, 2020.

**Podium**

LaValva P, Pahys J, **Garg S**, Bumpass D, Sucato D, Samdani A, Emans J, Erickson M, Kelly M, Lenke M, Gupta M, Boachie-Adjei O, Sponseller P, Newton P, McCarthy R, Shah S, Shufflebarger H, Yaszay B, Cahill P. Preoperative halo gravity traction for severe pediatric spinal deformity: Can it replace a vertebral column resection? Pediatric Orthopaedic Society of North America. San Diego, CA May 13-16, 2020.

**Podium**

**Garg S**, Thomas J, Quick H, Carry P, Kim E, Erickson M. Ultrasonic bone scalpel (USBS) does not reduce blood loss in adolescent idiopathic scoliosis (AIS): Randomized clinical trial. Pediatric Orthopaedic Society of North America. San Diego, CA May 13-16, 2020.

**Podium**

Larson AN, Polly D, Sponseller P, Richards B, **Garg S**, Labella H, Weinstein S, Shah S, Crawford C, Oetgen M, Sanders J, Fletcher N, Blakemore L, Kelly M, Brearley A, Erickson M, Parent S, Aubin C, Sucato D. Prospective randomized controlled trial of implant density in AIS: Results of the minimize implants maximize outcomes study. Pediatric Orthopaedic Society of North America. San Diego, CA May 13-16, 2020.

**Podium**

Compton E, Andras L, Vitale M, **Garg S**, Stone J, Fletcher N, Illingworth K, Martinez R, Kim E, Keil L, Harris H, Skaggs D. Power pedicle tract preparation and screw placement: A multicenter study of early adopters. Pediatric Orthopaedic Society of North America. San Diego, CA May 13-16, 2020.

**Podium**

Simhon M, Matsumoto H, **Garg S**, Redding G, Samdani A, Smith J, Sponseller P, Vitale M, Roye B, Pediatric spine study group. Bigger is better: Larger thoracic height is associated with increased health related quality of life at skeletal maturity. Pediatric Orthopaedic Society of North America. San Diego, CA May 13-16, 2020.

**Podium**

Matsumoto H, Ball J, Roye B, **Garg S**, Erickson M, Samdani A, Skaggs D, Roye D, Vitale M, Pediatric spine study group. Uncorrected pelvic obliquity is associated with lower health related quality of life in ambulatory but not non-ambulatory patients after surgical treatment for early onset scoliosis. Pediatric Orthopaedic Society of North America. San Diego, CA May 13-16, 2020.

**Podium**

**Garg S**, Thomas J, Quick H, Carry P, Kim E, Erickson M. Ultrasonic bone scalpel (USBS) does not reduce blood loss in adolescent idiopathic scoliosis (AIS): Randomized clinical trial. Scoliosis Research Society. Phoenix, AZ Sept 9-13, 2020.

**Podium**

Mehta N, Magee L, Nocka HR, Sturm PF, Pahys JM, **Garg S**, Murphy R, Pediatric Spine Study Group, Cahill P. Mental health consequences of serial Mehta casting: Negative correlation with behavioral development. Scoliosis Research Society. Phoenix, AZ Sept 9-13, 2020.

**Podium**

Gupta M, Lenke LG, Boachie-Adjei O, Bumpass DB, Erickson MA, **Garg S**, McCarthy RE, Newton PO, Pahys JM, Samdani AF, Shah SA, Shufflebarger HL, Sponseller PD, Sucato DJ, Yaszay B, Sides BA, Kelly MP, Fox Pediatric Spinal Deformity Study Group. Intraoperative and early postoperative complications after surgery for severe pediatric spinal deformity have a high rate of resolution at 2 years but affect outcome scores. Scoliosis Research Society. Phoenix, AZ Sept 9-13, 2020.

**Podium**

Gupta M, Lenke LG, Boachie-Adjei O, Bumpass DB, Erickson MA, **Garg S**, McCarthy RE, Newton PO, Pahys JM, Samdani AF, Shah SA, Shufflebarger HL, Sponseller PD, Sucato DJ, Yaszay B, Sides BA, Kelly MP, Fox Pediatric Spinal Deformity Study Group. Surgical treatment of severe pediatric spinal deformity significantly improves pulmonary function. Scoliosis Research Society. Phoenix, AZ Sept 9-13, 2020.

**Podium**

Gupta M, Lenke LG, Boachie-Adjei O, Bumpass DB, Erickson MA, **Garg S**, McCarthy RE, Newton PO, Pahys JM, Samdani AF, Shah SA, Shufflebarger HL, Sponseller PD, Sucato DJ, Yaszay B, Sides BA, Kelly MP, Fox Pediatric Spinal Deformity Study Group. Surgery for severe pediatric spinal deformity results in improved spinal appearance questionnaire scores at 2 years. Scoliosis Research Society. Phoenix, AZ Sept 9-13, 2020.

**ePoster**