

CURRICULUM VITAE  
The Johns Hopkins University School of Medicine

(Signature)   
Amit Jain, MD, MBA, FAAOS, FACS

9 September 2024  
Date

**DEMOGRAPHIC AND PERSONAL INFORMATION**

**Current Appointments**

University

2022-Present Spine Fellowship Director, Orthopaedic Surgery, Johns Hopkins University, Baltimore, MD  
2022-Present Director of Business Development and Strategy, Dept of Orthopaedic Surgery, Johns Hopkins  
2020-Present Associate Professor, Orthopaedic Surgery, Johns Hopkins University, Baltimore, MD  
2020-Present Associate Professor, Neurological Surgery, Johns Hopkins University, Baltimore, MD  
2020-Present Core Faculty, Hopkins Business of Health Initiative, Johns Hopkins University, Baltimore, MD  
2020-Present Core Faculty, Center for Musculoskeletal Research, Johns Hopkins University, Baltimore, MD  
2020-Present Affiliate Faculty, Laboratory for Computational Sensing and Robotics, Whiting School of  
Engineering, Johns Hopkins University, Baltimore, MD  
2018-Present Chief, Minimally Invasive Spine Surgery, Johns Hopkins University, Baltimore, MD  
2018-Present Director, Spine Research, Johns Hopkins University, Baltimore, MD

Health System

2024-Present Medical Director, Value Based Care, Office of Population Health, Johns Hopkins Health  
System, Baltimore, MD

Hospital

2018-Present Attending Physician, Johns Hopkins Hospital, Baltimore, MD  
2018-Present Attending Physician, Johns Hopkins Children's Center, Baltimore, MD  
2018-Present Attending Physician, Howard County General Hospital, Baltimore, MD

**Personal Data**

Address 601 N. Caroline St, JHOC 5230  
Department of Orthopaedic Surgery  
Baltimore, MD 21287  
Tel 443-287-0198  
Fax 410-502-6816  
Email AmitJain@jhmi.edu

**Education and Training**

Undergraduate

2004-2008 BS, Bioengineering, UC Berkeley, Berkeley, CA, with High Honors

Doctoral

2008-2012 MD, Johns Hopkins University School of Medicine, Baltimore, MD

Postdoctoral

2012-2017 Residency in Orthopaedic Surgery, Johns Hopkins University, Baltimore, MD  
2017-2018 Fellowship in Spinal Surgery, Emory University, Atlanta, GA

Graduate

2019-2022 MBA, Johns Hopkins Carey Business School, Baltimore, MD

## Professional Experience

2017-2018 Instructor/Fellow, Spine Surgery, Emory Spine Center, Emory University, Atlanta, GA  
2018-2020 Assistant Professor, Orthopaedic Surgery, Johns Hopkins University, Baltimore, MD

## PUBLICATIONS (H-INDEX: 43)

### Original Research [OR]

1. Ulrich T, **Jain A**, Tanner K, MacKay J, Kumar S. Probing cellular mechanobiology in three-dimensional culture with collagen-agarose matrices. *Biomaterials*. 2010 Mar; 31(7):1875-84.
2. Sponseller P, **Jain A**, Lenke L, Shah S, Sucato D, Emans J, Newton P. Vertebral column resection in children with neuromuscular spine deformity. *Spine*. 2012 May; 37(11):E655-E661.
3. **Jain A**, Stein B, Skolasky R, Jones L, Hungerford M. Total joint arthroplasty in patients with rheumatoid arthritis: A United States experience from 1992 through 2005. *J Arthroplasty*. 2012 Jun; 27(6):881-8.
4. Hassanzadeh H, **Jain A**, Tan E, Stein B, Van Hoy M, Stewart N, Lemma M. Postoperative incentive spirometry use. *Orthopedics*. 2012 Jun; 35(6):e927-31.
5. Tan E, **Jain A**, Hassanzadeh H, Bernard J, Lemma M. Role of hematologic laboratory studies in postoperative management of patients undergoing anterior cervical discectomy and fusion. *Orthopedics*. 2012 Jun; 35(6):e917-21.
6. **Jain A**, Erkula G, Leet A, Ain M, Sponseller P. Implant-related fractures in children: a 15-year review. *J Pediatr Orthop*. 2012 Jul; 32(5):547-52.
7. **Jain A**, Amin A, Jain P, Burger P, Jallo G, Lim M, Bettegowda C. Subependymoma: clinical features and surgical outcomes. *Neurological Research*. 2012 Sep; 34(7):677-84.
8. **Jain A**, Njoku D, Sponseller P. Does patient diagnosis predict blood loss during posterior spinal fusion in children? *Spine*. 2012 Sep; 37(19):1683-7.
9. Morris A, Do D, Gottlieb-Smith R, Ng J, **Jain A**, Shochet R, Wright S. The impact of a fitness intervention on medical students. *Southern Medical J*. 2012 Dec; 105(12):630-4.
10. Hassanzadeh H, **Jain A**, El Dafrawy M, Ain M, Mesfin A, Skolasky R, Kebaish K. Three-column osteotomies in the treatment of spinal deformity in adult patients 60 years old and older: outcome and complications. *Spine*. 2013 Apr; 38(9):726-31.
11. **Jain A**, Kebaish K, Sponseller P. Factors associated with use of bone morphogenetic protein during pediatric spinal fusion surgery: an analysis of 4,817 patients. *J Bone Joint Surg Am*. 2013 Jul; 95(14):1265-70.
12. Hassanzadeh H, **Jain A**, El Dafrawy M, Mesfin A, Neubauer P, Skolasky R, Kebaish K. Clinical results and functional outcome in adult patients surgically treated for spinal deformity: primary versus revision surgery. *J Bone Joint Surg Am*. 2013 Aug; 95(15):1413-9.
13. Sponseller P, **Jain A**, Shah S, Samdani A, Yaszay B, Newton P, Thaxton L, Bastrom T, Marks M. Deep wound infections after spinal fusion in children with cerebral palsy: a prospective cohort study. *Spine*. 2013 Nov; 38(23):2023-7.
14. Hassanzadeh H, Gjolaj J, El Dafrawy M, **Jain A**, Skolasky R, Cohen D, Kebaish M. The timing of surgical staging has a significant impact on the complications and functional outcomes of adult spinal deformity surgery. *Spine J*. 2013 Dec; 13(12):1717-22.
15. Hassanzadeh H, Gupta S, **Jain A**, El Dafrawy M, Skolasky R, Kebaish K. Type of anchor at the proximal fusion level has a significant effect on the incidence of proximal junctional kyphosis and outcome in adults after long posterior spinal fusion. *Spine Deformity*. 2013; 1(4):299-305.
16. Hassanzadeh H, **Jain A**, El Dafrawy M, Ain M, Skolasky R, Kebaish K. Clinical results and functional outcomes in adult patients after revision surgery for spinal deformity correction: patients younger than sixty-five years versus sixty-five years and older. *Spine Deformity*. 2013; 1(5):371-376.
17. Hassanzadeh H, **Jain A**, Kebaish K, Neubauer P, Mesfin A, Stein B, Ain M. Prevalence of allograft contamination during intraoperative processing for spinal deformity correction surgery. *Spine Deformity*. 2013; 1(5):348-351.
18. Menga E, Kebaish K, **Jain A**, Carrino J, Sponseller P. Clinical results and functional outcomes after direct screw repair of spondylolysis. *Spine*. 2014 Jan; 39(1):104-10.
19. Menga E, **Jain A**, Kebaish K, Zimmerman S, Carrino J, Sponseller P. Anatomic parameters: direct intralaminar screw repair of spondylolysis. *Spine*. 2014 Feb; 39(3):E153-8.
20. **Jain A**, Hassanzadeh H, Strike S, Skolasky R, Riley L. rhBMP use in cervical spine surgery: associated factors and in-hospital complications. *J Bone Joint Surg Am*. 2014 Apr; 96(8):617-23.

21. Stein B, Hassanzadeh H, **Jain A**, Lemma M, Cohen D, Kebaish K. Changing trends in cervical spine fusions in patients with rheumatoid arthritis. *Spine*. 2014 Jul 1; 39(15):1178-82.
22. **Jain A**, Karas D, Skolasky R, Sponseller P. Thromboembolic complications in children after spinal fusion surgery. *Spine*. 2014 Jul; 39(16):1325-9.
23. **Jain A**, Menga E, Hassanzadeh H, Jain P, Lemma M, Mesfin A. Thoracic disc disorders with myelopathy: treatment trends, patient characteristics, and complications. *Spine*. 2014 Sep 15; 39(20):E1233-8.
24. Bazzi A, Brooks J, **Jain A**, Ain M, Tis J, Sponseller P. Is non-operative treatment of pediatric type I open fractures safe and effective? *J Child Orthop*. 2014 Dec; 8(6):467-471.
25. **Jain A**, Sponseller P, Kebaish K, Mesfin A. National trends in spinal fusion surgery for Scheuermann Kyphosis. *Spine Deformity*. 2015; 3:52-56.
26. Brodell D, **Jain A**, Elfar J, Mesfin A. National Trends in the Management of Central Cord Syndrome: An Analysis of 16,134 patients. *Spine J*. 2015 Mar 1; 15(3):435-42.
27. **Jain A**, Sponseller P, Newton P, Shah S, Cahill P, Njoku D, Betz R, Samdani A, Bastrom T, Marks M, Harms Study Group. Smaller Patients Lose a Greater Proportion of Their Blood Volume during Posterior Spinal Arthrodesis. *J Bone Joint Surg Am*. 2015 Mar 18; 97(6):507-11.
28. Mesfin A, El Dafrawy M, **Jain A**, Hassanzadeh H, Kostuik J, Lemma M, Kebaish K. Surgical outcomes of long spinal fusions for scoliosis in adult patients with rheumatoid arthritis. *J Neurosurg Spine*. 2015 Apr; 22(4):367-73.
29. **Jain A**, Sponseller P, Negrini S, Newton P, Cahill P, Bastrom T, Marks M, Harms Study Group. SRS-7: A Valid, Responsive, Linear, and Unidimensional Functional Outcome Measure for Operatively Treated Patients with AIS. *Spine*. 2015 May 1; 40(9):650-5.
30. **Jain A**, Brooks J, Rao S, Ain M, Sponseller P. Cervical fractures with associated spinal cord injury in children and adolescents: epidemiology, costs, and in-hospital mortality rates in 4418 patients. *J Child Orthop*. 2015 Jun; 9(3):171-5.
31. **Jain A**, Puvanesarajah V, Menga E, Sponseller P. Unplanned Hospital Readmissions and Reoperations after Pediatric Spinal Fusion Surgery. *Spine*. 2015 Jun 1; 40(11):856-62.
32. Ponnusamy K, **Jain A**, Thakkar S, Sterling R, Skolasky R, Khanuja H. Inpatient mortality and morbidity for dialysis patients undergoing a primary total hip or knee arthroplasty. *J Bone Joint Surg Am*. 2015 Aug 19; 97(16):1326-32.
33. Mesfin A, El Dafrawy M, **Jain A**, Hassanzadeh H, Kebaish K. Total en bloc spondylectomy for primary and metastatic spine tumors. *Orthopedics*. 2015 Nov; 38(11):e995-e1000.
34. Menga E, Hirschfeld C, **Jain A**, Tran D, Caine H, Njoku D, Karol L, Sponseller P. Intraoperative Cardiopulmonary Arrest in Children Undergoing Spinal Deformity Correction: Causes and Associated Factors. *Spine*. 2015 Nov; 40(22):1757-62.
35. **Jain A**, Thompson J, Brooks J, Ain M, Sponseller P. Implant-Related Fractures in Children with Proximal Femoral Osteotomy: Blade-Plate versus Screw-Side-Plate Constructs. *J Pediatr Orthop*. 2016 Jan; 36(1):e1-5.
36. Liu A, **Jain A**, Sankey E, Jallo G, Bettegowda C. Sporadic Intramedullary Hemangioblastoma of the Spine: A Review of 21 Cases. *Neurol Res*. 2016 Mar; 38(3):205-9.
37. Brooks J, **Jain A**, Perez-Grueso F, Skaggs D, Thompson G, Akbarnia B, Sponseller P, Growing Spine Study Group. Outcomes of Pelvic Fixation in Growing Rod Constructs: An Analysis of Patients with a Minimum of Four Years of Postoperative Follow-Up. *Spine Deformity*. 2016 May; 4(3):211-216.
38. **Jain A**, Kebaish K, Sponseller P. Sacral alar iliac fixation in pediatric deformity: radiographic outcomes and complications. *Spine Deformity*. 2016 May; 4(3):225-229.
39. Bian Q, **Jain A**, Xu X, Kebaish K, Crane J, Zhang Z, Wan M, Ma L, Riley L, Sponseller P, Guo X, Lu W, Wang Y, Cao X. Excessive Activation of TGF $\beta$  by Spinal Instability Causes Vertebral Endplate Sclerosis. *Scientific Reports*. 2016 Jun 3; 6:27093.
40. De la Garza-Ramos R, **Jain A**, Kebaish K, Bydon A, Passias P, Sciubba D. Inpatient Morbidity and Mortality after Adult Spinal Deformity Surgery in Teaching versus Non-Teaching Hospitals. *J Neurosurg Spine*. 2016;25(1):15-20.
41. **Jain A**, Sponseller P, Flynn J, Shah S, Thompson G, Emans J, Pawelek J, Akbarnia B, Growing Spine Study Group. Avoidance of "Final" Surgical Fusion After Growing-Rod Treatment for Early-Onset Scoliosis. *J Bone Joint Surg Am*. 2016 Jul 6; 98(13):1073-8.
42. De La Garaza-Ramos R, Goodwin C, Abu-Bonsrah N, **Jain A**, Miller E, Neuman B, Protosaltis T, Passias P, Sciubba D. Prolonged length of stay after posterior surgery for cervical spondylotic myelopathy in patients over 65 years of age. *J Clin Neuroscience*. 2016 Sep;31:137-41.
43. Puvanesarajah V, **Jain A**, Shimer A, Singla A, Shen F, Hassanzadeh H. The effect of coagulopathies on perioperative complications and clinical outcomes in patients treated with posterior lumbar fusions. *Spine*. 2016 Sep;41(17):1063-8.

44. **Jain A**, Lafage V, Kelly M, Hassanzadeh H, Neuman B, Sciubba D, Bess S, Shaffrey C, Ames C, Scheer J, Burton D, Gupta M, Hart R, Hostin R, Kebaish K, International Spine Study Group. Validity, reliability, and responsiveness of SRS-7 as an outcomes assessment instrument for operatively treated patients with adult spinal deformity. *Spine*. 2016 Sep 15;41(18):1463-8.
45. Puvanesarajah V, Shen F, Cancienne J, Novicoff W, **Jain A**, Shimer A, Hassanzadeh H. Risk Factors for Revision Surgery Following Primary Adult Spinal Deformity Surgery in Patients 65 Years and Older. *J Neurosurg Spine*. 2016 Oct;25(4):486-493.
46. Sponseller P, **Jain A**, Newton P, Lonner B, Shah S, Shufflebarger H, Bastrom T, Marks M, Betz R. Posterior Spinal Fusion with Pedicle Screws in Patients with Idiopathic Scoliosis and Open Triradiate Cartilage: Does Deformity Progression Occur? *J Pediatr Orthop*. 2016 Oct-Nov;36(7):695-700.
47. Brooks J, Reidler J, **Jain A**, LaPorte D, Sterling R. Post-interview communication during application to orthopaedic surgery residency programs. *J Bone Joint Surg Am*. 2016 Oct 5;98(19):e84.
48. Puvanesarajah V, **Jain A**, Hess D, Shimer A, Shen F, Hassanzadeh H. Complications and Mortality after Lumbar Spinal Fusion in Elderly Patients with Late Stage Renal Disease. *Spine*. 2016 Nov 1;41(21):E1298-E1302.
49. De la Garza Ramos R, Goodwin C, **Jain A**, Abu-Bonsrah N, Fisher C, Bettogowda C, Sciubba D. Development of a Metastatic Spinal Tumor Frailty Index (MSTFI) Using a Nationwide Database and Its Association with Inpatient Morbidity, Mortality, and Length of Stay After Spine Surgery. *World Neurosurg*. 2016 Nov;95:548-555.e4.
50. Bernard J, Dattilo J, Srikumaran U, Zikria B, **Jain A**, LaPorte D. Reliability and validity of 3 methods of assessing orthopedic resident skill in shoulder surgery. *J Surg Educ*. 2016 Nov - Dec;73(6):1020-1025.
51. De la Garza Ramos R, **Jain A**, Nakhla J, Nasser R, Puvanesarajah V, Hassanzadeh H, Yassari R, Sciubba D. Postoperative morbidity and mortality after elective anterior cervical fusion in patients with chronic and end-stage renal disease. *World Neurosurg*. 2016 Nov;95:480-485.
52. **Jain A**, Sponseller P, Shah S, Samdani A, Cahill P, Yaszay B, Njoku D, Abel M, Newton P, Marks M, Narayanan U, The Harms Study Group. Neuromuscular Subclassification of GMFCS Level 5 Cerebral Palsy Patients as a Predictor for Postoperative Complications and Health-Related Quality of Life Following Spinal Fusion. *J Bone Joint Surg Am*. 2016 Nov 2;98(21):1821-1828.
53. Scheer J, Osorio J, Smith J, Schwab F, Lafage V, Hart R, Bess S, Line B, Diebo B, Protosaltis T, **Jain A**, Ailon T, Burton D, Klineberg E, Ames C, International Spine Study Group. Development of Validated Computer Based Pre-operative Predictive Model for Proximal Junction Failure (PJF) or Clinically Significant PJK with 86% Accuracy based on 510 ASD Patients with 2-year Follow-up. *Spine*. 2016 Nov 15;41(22):E1328-E1335.
54. Bernstein D, **Jain A**, Brodell D, Li Y, Rubery P, Mesfin A. Impact of the Economic Downturn on Elective Cervical Spine Surgery in the United States: A National Trend Analysis, 2003-2013. *World Neurosurg*. 2016 Dec;96:538-544.
55. Puvanesarajah V, **Jain A**, Qureshi R, Carstensen S, Tyger R, Hassanzadeh H. Elective Thoracolumbar Spine Fusion Surgery in Patients with Parkinson Disease. *World Neurosurg*. 2016 Dec;96:267-271.
56. Yildirim B, Puvanesarajah V, An H, Novicoff W, **Jain A**, Shen F, Hassanzadeh H. Lumbosacral Epidural Lipomatosis: A Matched Control Study. *World Neurosurg*. 2016 Dec;96:209-214.
57. De la Garza-Ramos R, Goodwin CR, **Jain A**, Abu-Bonsrah N, Huang N, Miller E, Kebaish K, Sponseller P, Sciubba D. Patient and operative factors associated with postoperative complications in adolescent idiopathic scoliosis surgery: An analysis of 36335 patients from the Nationwide Inpatient Sample. *J Neurosurg Pediatrics*. 2016 Dec;25(6):730-736.
58. Puvanesarajah V, **Jain A**, Cancienne J, Shimer A, Singla A, Shen F, Hassanzadeh H. Complication and Reoperation Rates Following Surgical Management of Cervical Spondylotic Myelopathy in Medicare Beneficiaries. *Spine*. 2017 Jan 1;42(1):1-7.
59. Ajiboye R, Puvanesarajah V, Zoller S, **Jain A**, D'Oro A, Kebaish K, Burke Z, Shaffrey C, Sheppard W, Sciubba D, Wang C. Poor Nutrition Status and Lumbar Spine Fusion Surgery in the Elderly. *Spine*. 2017 Jan 1;42(14):979-83.
60. Gans I, **Jain A**, Sirisreerex N, Haut E, Hasenboehler E. Current practice of antibiotic prophylaxis for surgical fixation of closed long bone fractures: A survey of 297 members of the Orthopaedic Trauma Association. *Patient Safety in Surgery*. 2017;11:2.
61. Bian Q, Ma L, **Jain A**, Crane J, Kebaish K, Wan M, Zhang Z, Guo X, Sponseller P, Seguin C, Riley L, Wang Y, Cao X. Mechanosignaling activation of TGF $\beta$  maintains intervertebral disc homeostasis. *Bone Research*. 2017;5:17008.
62. Puvanesarajah V, Werner B, Cancienne J, **Jain A**, Pehlivan H, Shimer A, Singla A, Shen F, Hassanzadeh H. Morbid Obesity and Lumbar Fusion in Patients Older than 65 Years: Complications, Readmissions, Costs, and Length of Stay. *Spine*. 2017 Jan 15;42(2):122-127.
63. Puvanesarajah V, **Jain A**, Shimer AL, Li XJ, Singla A, Shen FH, Hassanzadeh H. Complications and Mortality Following 1 to 2 Level Lumbar Fusion Surgery in Patients Above 80 Years of Age. *Spine*. 2017 Mar 15;42(6):437-441.

64. De la Garza R, Goodwin C, Elder B, Boah A, Miller E, **Jain A**, Klineberg E, Ames C, Neuman B, Kebaish K, Lafage V, Schwab F, Bess S, Sciubba D. Preoperative functional status as a predictor of short-term outcome in adult spinal deformity surgery. *J Clin Neurosci*. 2017 May;39:118-123.
65. Puvanesarajah V, **Jain A**, Singla A, Shen F, Shimer A, Hassanzadeh H. Complications and Mortality Following 1 to 2 Level Anterior Cervical Fusion for Cervical Spondylosis in Patients Above 80 Years of Age. *Spine*. 2017 May;42(9):E509-E514.
66. **Jain A**, Modhia U, Njoku D, Shah S, Newton P, Marks M, Bastrom T, Miyaji F, Sponseller P. Recurrence of Deep Surgical Site Infection in Cerebral Palsy After Spinal Fusion is Rare. *Spine Deformity*. 2017 May;5(3):208-212.
67. Buckland A, Puvanesarajah V, Vigdorichik J, Schwarzkopf R, **Jain A**, Klineberg E, Hart R, Hassanzadeh H, International Spine Study Group. Dislocation of Primary Total Hip Arthroplasty is More Common in Patients with Lumbar Spinal Fusion. *Bone and Joint J*. 2017 May;99-B(5):585-591.
68. **Jain A**, Kebaish K, Sciubba D, Hassanzadeh H, Scheer J, Neuman B, Lafage V, Bess S, Protosaltis T, Burton D, Smith J, Shaffrey C, Hostin R, Ames C, International Spine Study Group. Early patient-reported outcomes predict 3-year outcomes in operatively treated patients with adult spinal deformity. *World Neurosurg*. 2017 Jun;102:258-262.
69. Puvanesarajah V, **Jain A**, Kebaish K, Shaffrey C, Sciubba D, De la Garza Ramos R, Khanna A, Hassanzadeh H. Poor Nutrition Status and Lumbar Spine Fusion Surgery in the Elderly: Readmissions, Complications, and Mortality. *Spine*. 2017 Jul;42(13):979-983.
70. Rao S, **Jain A**, Zhou D, Njoku D, Sponseller P. Routine Preoperative Echocardiograms in Select Patients with Adolescent Idiopathic Scoliosis Rarely Show Abnormalities and do not Predict Adverse Cardiovascular Events. *MOJ Orthopaedics and Rheumatology*. 2017; 7(1):00259.
71. Passias P, Poorman G, Jalai C, Neuman B, De la Garza-Ramos R, Miller E, **Jain A**, Sciubba D, McClelland S, Day L, Ramachandran S, Vira S, Diebo B, Isaacs E, Bono O, Bess S, Gerling M, Lafage V. Morbidity of Adult Spinal Deformity Surgery in Elderly Has Declined Over Time. *Spine*. 2017 Aug 15;42(16):E978-E982.
72. Puvanesarajah V, **Jain A**, Cancienne J, Stein B, Novicoff W, Shimer A, Shen F, Hassanzadeh H. BMP Use and the Risk of Revision Surgery Following Long Posterolateral Fusions in Elderly. *Clin Spine Surg*. 2017 Aug;30(7):931-937.
73. Poorman G, Passias P, Buckland A, Jalai C, Kelly M, Sciubba D, Neuman B, Hamilton D, **Jain A**, Diebo B, Lafage V, Bess S, Klineberg E, International Spine Study Group. Comparative Analysis of Peri-operative Outcomes Using Nationally Derived Hospital Discharge Data Relative to a Prospective Multi-center Surgical Database of Adult Spinal Deformity Surgery. *Spine*. 2017 Aug 1;42(15):1165-1171.
74. Goldschmidt E, Angriman F, Agarwal N, Zhou J, Chen K, Tempel Z, Gerszten P, Kanter A, Okonkwo D, Passias P, Scheer J, Protosaltis T, Lafage V, Lafage R, Schwab F, Bess S, Ames C, Smith J, Shaffrey C, Miller E, **Jain A**, Neuman B, Sciubba D, Burton D, Hamilton D, International Spine Study Group. A Novel Tool for Deformity Surgery Planning: Determining the Magnitude of Lordotic Correction Required to Achieve a Desired Sagittal Vertical Axis. *World Neurosurg*. 2017 Aug;104:904-908.
75. Qureshi R, Puvanesarajah V, **Jain A**, Kebaish K, Shimer A, Shen F, Hassanzadeh H. Cost Implications of Primary versus Revision surgery in Adult Spinal Deformity. *World Neurosurg*. 2017 Aug;104:68-73.
76. Puvanesarajah V, Kirby D, **Jain A**, Werner B, Hassanzadeh H. Cost Variation of Anterior Cervical Fusions in Elderly Medicare Beneficiaries. *Spine*. 2017 Sep 1;42(17):E1010-E1015.
77. Hassanzadeh H, Nandyala S, Puvanesarajah V, Manning B, **Jain A**, Hammerberg K. Serial Mehta Cast Utilization in Infantile Idiopathic Scoliosis: Evaluation of Radiographic Predictors. *J Pediatr Orthop*. 2017 Sep;37(6):387-391.
78. Scheer J, Keefe M, Lafage V, Kelly M, Bess S, Burton D, Hart R, **Jain A**, Lonner B, Protosaltis T, Hostin R, Shaffrey C, Smith J, Schwab F, Ames C. Importance of Patient Reported Individualized Goals When Assessing Outcomes for Adult Spinal Deformity (ASD): Initial experience with a Patient Generated Index (PGI). *Spine J*. 2017 Oct;17(10):1397-1405.
79. Hamilton D, Buza J, Passias P, Jalai C, Kim H, Ailon T, Gupta M, Sciubba D, **Jain A**, Ames C, Deviren V, Daniels A, Lafage V, Bess S, Klineberg E, Shaffrey C, Smith J, Hart R. The Fate of Patients with Adult Spinal Deformity Incurring Rod Fracture After Thoracolumbar Fusion. *World Neurosurg*. 2017 Oct;106:905-911.
80. **Jain A**, Hassanzadeh H, Puvanesarajah V, Klineberg E, Sciubba D, Kelly M, Hamilton D, Lafage V, Buckland A, Passias P, Protosaltis T, Lafage R, Smith J, Shaffrey C, Kebaish K, International Spine Study Group. Incidence of perioperative medical complications and mortality among elderly undergoing surgery for spinal deformity: analysis of 3519 patients. *J Neurosurg Spine*. 2017 Nov;27(5):534-539.
81. **Jain A**, Sponseller P, Shah S, Yaszay B, Njoku D, Miyaji F, Newton P, Bastrom T, Marks M, Harms Study Group. Incidence of and risk factors for loss of one blood volume during spinal fusion surgery in patients with cerebral palsy. *J Pediatr Orthop*. 2017 Dec;37(8):e484-e487.

82. **Jain A, Sullivan B, Kuwabara A**, Kebaish K, Sponseller P. Sacral-Alar-Iliac Fixation in Children with Neuromuscular Scoliosis: Minimum 5-Year Follow-Up. *World Neurosurg*. 2017 Dec;108:474-478.
83. **Miller E**, Neuman B, **Jain A**, Daniels A, Ailon T, Sciubba D, Kebaish K, Lafage V, Scheer J, Smith J, Bess S, Shaffrey C, Ames C, International Spine Study Group. An assessment of frailty as a tool for risk stratification in adult spinal deformity surgery. *Neurosurg Focus*. 2017 Dec;43(6):E3.
84. **Qureshi R, Puvanesarajah V, Jain A**, Shimer A, Shen F, Hassanzadeh H. A Comparison of Anterior and Posterior Lumbar Interbody Fusions— Complications, Readmissions, Discharge Dispositions and Costs. *Spine*. 2017 Dec;42(24):1865-1870.
85. **Puvanesarajah V**, Cancienne J, Werner B, **Jain A**, Singla A, Shimer A, Shen F, Hassanzadeh H. Perioperative complications associated with posterolateral spine fusions: a study of elderly Medicare beneficiaries. *Spine*. 2018 Jan 1;43(1):16-21.
86. Yeramanehi S, Gum J, Carreon L, Klineberg E, Smith J, **Jain A**, Hostin R. Impact of Readmissions in Episodic Care of Adult Spinal Deformity: Event-based Cost Analysis of 695 Consecutive Cases. *J Bone Joint Surg Am*. 2018 Mar 21;100(6):487-495.
87. **Jain A**, Menga E, Mesfin A. Outcomes Following Surgical Management of Cauda Equina Syndrome: Does Race Matter? *Journal of Racial and Ethnic Health Disparities*. 2018 Apr;5(2):287-292.
88. **Qureshi R**, Werner B, Puvanesarajah V, Horowitz J, **Jain A**, Sciubba D, Shen F, Hassanzadeh H. Factors Affecting Long-Term Postoperative Narcotic Use in Discectomy Patients. *World Neurosurg*. 2018 Apr;112:e640-e644.
89. Goodwin R, De La Garza Ramos R, Abu-Bonsrah N, **Jain A**, Passias P, Neuman B, Sciubba D. Predictive factors for percutaneous endoscopic gastrostomy tube placement after anterior cervical fusion. *Global Spine J*. 2018 May;8(3):260-265.
90. **Grabel Z**, Armaghani S, Vu C, **Jain A**, Yoon ST. Variations in treatment of C2 fractures by time, age, and geographic region in the United States: an analysis of 4818 patients. *World Neurosurg*. 2018 May;113:e535-e541.
91. **Amin R, Puvanesarajah V, Qureshi R, Jain A**, Shen F, Kebaish K, Hassanzadeh H. Lumbar Spine Fusion Surgery in Solid Organ Transplant Recipients is Associated with Increased Medical Complications and Mortality. *Spine*. 2018 May 1;43(9):617-621.
92. **Amin R, Raad M, Jain A**, Sandhu K, Frank S, Kebaish K. Increasing body mass index is associated with worse perioperative outcomes and higher costs in adult spinal deformity surgery. *Spine*. 2018 May 15;43(10):693-698.
93. Neuman B, Ailon T, Scheer J, Klineberg E, Sciubba D, **Jain A**, Zebala L, Passias P, Daniels A, Burton D, Protosaltis T, Hamilton K, Ames C, International Spine Study Group. Development and validation of a novel adult spinal deformity surgical invasiveness score: analysis of 464 patients. *Neurosurgery*. 2018 Jun 1;82(6):847-853.
94. **Raad M, Jain, A**, Neuman B, Hassanzadeh H, Gupta M, Burton D, Mundis G, Lafage V, Klineberg E, Hostin R, Ames C, Bess S, Kebaish K, Sciubba D. The Use of Patient-Reported Preoperative Activity Levels as a Stratification Tool for Short Term and Long-Term Outcomes in Adult Spinal Deformity Patients. *J Neurosurg Spine*. 2018 Jul;29(1):68-74. ?
95. **Horowitz J, Jain A**, Puvanesarajah V, Qureshi R, Hassanzadeh H. Risk Factors, Additional Length of Stay, and Cost Associated with Postoperative Ileus Following Anterior Lumbar Interbody Fusion in the Elderly. *World Neurosurg*. 2018 Jul;115:e185-e189.
96. Kelly M, Kim H, Ames C, Burton D, Carreon L, Polly D, Hostin R, **Jain A**, Gum J, Lafage V, Schwab F, Shaffrey C, Smith J, Bess S, ISSG. Minimum Detectable Measurement Difference for Health-Related Quality of Life Measures Varies According Age and Disability in Adult Spinal Deformity: Implications for Calculating Minimal Clinically Important Difference. *Spine*. 2018 Jul 1;43(13):E790-E795.
97. Zheng L, Cao Y, Ni S, Qi H, Ling Z, Xu X, Zou X, Wu T, Deng R, Hu B, Gao B, Chen H, Li Y, Zhu J, Tintani F, Demehri S, **Jain A**, Kebaish K, Liao S, Séguin C, Crane J, Wan M, Lu H, Sponseller P, Riley L, Zhou X, Hu J, Cao X. Ciliary parathyroid hormone signaling activates transforming growth factor- $\beta$  to maintain intervertebral disc homeostasis during aging. *Bone Res*. 2018 Jul 18; 6-21.
98. **Jain A, Sullivan B**, Shah S, Samdani A, Yaszay B, Marks M, Sponseller P, Harms Study Group. Caregiver perceptions and health-related quality-of-life changes in cerebral palsy patients after spinal arthrodesis. *Spine*. 2018 Aug 1;43(15):1052-1056.
99. **Jain A, Sullivan B**, Hassanzadeh H, Hsu N, Sponseller P. Posterolateral discectomies for treatment of pediatric spinal deformities. *Spine*. 2018 Aug;43(16):1139-1145.
100. Scheer J, Osorio J, Smith J, Schwab F, Hart R, Hostin R, Lafage V, **Jain A**, Burton D, Bess S, Ailon T, Protosaltis T, Klineberg E, Shaffrey C, Ames C, ISSG. Development of a Preoperative Predictive Model for Reaching the Oswestry

- Disability Index Minimal Clinically Important Difference for Adult Spinal Deformity Patients. *Spine Deform.* 2018 Sep - Oct;6(5):593-599.
101. [Horowitz J](#), [Puvanesarajah V](#), **Jain A**, Li X, Shimer A, Shen F, Hassanzadeh H. Rheumatoid arthritis is associated with an increased risk of postoperative infection and revision surgery in elderly patients undergoing anterior cervical fusion. *Spine.* 2018 Sep 1;43(17):E1040-E1044.
  102. Poorman G, Passias P, Qureshi R, Hassanzadeh H, Horn S, Bortz C, Segreto F, **Jain A**, Kelly M, Hostin R, Ames C, Smith J, LaFage V, Burton D, Bess S, Shaffrey C, Schwab F, Gupta M. Cost-utility analysis of cervical deformity surgeries using 1-year outcome. *Spine J.* 2018 Sep;18(9):1552-1557.
  103. [Raad M](#), **Jain A**, Neuman B, Hassanzadeh H, Gupta M, Burton D, Mundis G, Jr., Lafage V, Klineberg E, Hostin R, Ames C, Bess S, Sciubba D, Kebaish K, International Spine Study Group. Association of patient-reported narcotic use with short- and long-term outcomes after adult spinal deformity surgery: Multicenter study of 425 patients with 2-year follow-up. *Spine.* 2018 Oct 1;43(19):1340-1346.
  104. Yeramaneni S, Ames C, Bess S, Burton D, Smith J, Glassman S, Gum J, Carreon L, **Jain A**, Zygourakis C, Avramis I, Hostin R, International Spine Study Group. Center Variation in Episode-of-care Costs for Adult Spinal Deformity Surgery: results from a prospective, multicenter database. *Spine J.* 2018 Oct;18(10):1829-1836.
  105. [Kurucan E](#), [Bernstein D](#), Thirukumaran C, **Jain A**, Menga E, Rubery P, Mesfin A. National Trends in Spinal Fusion Surgery for Neurofibromatosis. *Spine Deformity.* 2018 Nov - Dec;6(6):712-718.
  106. [Raad M](#), Reidler J, El Dafrawy M, Amin R, **Jain A**, Neuman B, Riley L, Sciubba D, Kebaish K, Skolasky R. US regional variations in rates, outcomes, and costs of spinal arthrodesis for lumbar spinal stenosis in working adults aged 40-65. *J Neurosurg Spine.* 2018 Nov 2;30(1):83-90.
  107. [Segal D](#), [Grabel Z](#), Heller J, Rhee J, Michael K, Yoon S, **Jain A**. Epidemiology and treatment of central cord syndrome in the United States. *Journal of Spine Surgery.* 2018 Dec;4(4).
  108. [Raad M](#), **Jain A**, Huang M, Skolasky R, Sciubba D, Kebaish K, Neuman B. Validity and responsiveness of PROMIS in adult spinal deformity: the need for a self-image domain. *Spine J.* 2019 Jan;19(1):50-55.
  109. [Raad M](#), [Amin R](#), **Jain A**, Frank S, Kebaish K. Multilevel arthrodesis for adult spinal deformity: When should we anticipate major blood loss? *Spine Deform.* 2019 Jan;7(1):141-145.
  110. Chen H, Hu B, Lv X, Zhu S, Zhen G, Wan M, **Jain A**, Gao B, Chai Y, Yang M, Wang X, Deng R, Wang L, Cao Y, Ni S, Liu S, Yuan W, Chen H, Dong X, Guan Y, Yang H, Cao X. Prostaglandin E2 Mediates Sensory Nerve Regulation of Bone Homeostasis. *Nature Communications.* 2019 Jan;10(1):181.
  111. [Horowitz J](#), [Puvanesarajah V](#), **Jain A**, Raad M, Gjolaj J, Shen F, Hassanzadeh H. Fragility Fracture Risk in Elderly Patients with Cervical Myelopathy. *Spine.* 2019 Jan;44(2):96-102.
  112. [Amin R](#), [Raad M](#), **Jain A**, Khashan M, Hassanzadeh H, Frank S, Kebaish K. Risk factors for nonroutine discharge in adult spinal deformity surgery. *Spine J.* 2019 Feb;19(2):357-363.
  113. **Jain A**, Marks M, Kelly M, Lenke L, Errico T, Lonner B, Newton P, Sponseller P, Harms Study Group. Cost-Utility Analysis of Operative vs. Nonoperative Treatment of Thoracic Adolescent Idiopathic Scoliosis. *Spine.* 2019 Mar;44(5):309-317.
  114. [Pakpoor J](#), [Raad M](#), Harris A, Puvanesarajah V, Canner JK, Nadgir R, **Jain A**. Diagnostic Imaging Use for the Initial Evaluation of Low Back Pain by Primary Care Providers in the United States: 2011-2016. *J Am Coll Radiol.* 2019 Nov;16(11):1522-1527.
  115. [Bernstein D](#), Prong M, Kurucan E, **Jain A**, Menga E, Riew K, Mesfin A. National Trends and Complications in the Surgical Management of Ossification of the Posterior Longitudinal Ligament (OPLL). *Spine.* 2019 Nov 15;44(22):1550-1557.
  116. Neuman B, [Harris A](#), **Jain A**, Kebaish K, Sciubba D, Klineberg E, Kim H, Zebala L, Mundis G, Jr., Lafage V, Passias P, Lafage R, Protosaltis T, Bess S, Hamilton K, Scheer J, Ames C, International Spine Study Group. Reciprocal changes in cervical alignment after thoracolumbar arthrodesis for adult spinal deformity. *Spine.* 2019 Nov 15;44(22):E1311-E1316.
  117. [Raad M](#), El Dafrawy M, Harris A, Puvanesarajah V, Khashan M, **Jain A**, Hassanzadeh H, Kebaish K. The learning curve for performing three-column osteotomies in adult spinal deformity patients: One surgeon's experience with 197 cases. *Spine Journal.* 2019 Dec;19(12):1926-1933.
  118. [Labaran L](#), [Puvanesarajah V](#), [Rao S](#), Chen D, Shen FH, **Jain A**, Hassanzadeh H. Recent Preoperative Lumbar Epidural Steroid Injection Is an Independent Risk Factor for Incidental Durotomy During Lumbar Discectomy. *Global Spine J.* 2019 Dec;9(8):807-812.
  119. Ni S, Ling Z, Wang X, Cao Y, Wu T, Deng R, Crane J, Skolasky R, Demehri S, Zhen G, **Jain A**, Wu P, Pan D, Hu B, Lyu X, Li Y, Chen H, Qi H, Guan Y, Dong X, Wan M, Zou X, Lu H, Hu J, Cao X. Sensory innervation in porous

- endplates by Netrin-1 from osteoclasts mediates PGE2-induced spinal hypersensitivity in mice. *Nat Commun.* 2019 Dec 10;10(1):5643.
120. Sullivan B, Abousamra O, Puvanesarajah V, **Jain A**, Hadad M, Milstone A, Sponseller P. Deep infections after pediatric spinal arthrodesis: differences exist by idiopathic, neuromuscular, or genetic/syndromic cause of deformity. *J Bone Joint Surg Am.* 2019 Dec 18;101(24):2219-2225.
  121. Raad M, Pakpoor J, Harris A, Puvanesarajah V, Marrache M, Canner K, **Jain A**. Opioid Prescriptions for New Low Back Pain: Trends and Variability by State. *Journal of the American Board of Family Medicine.* 2020 Jan-Feb;33(1):138-142.
  122. Harris A, Marrache M, Jami M, Raad M, Puvanesarajah V, Hassanzadeh H, Lee S, Skolasky R, Bicket M, **Jain A**. Chronic Opioid Use Following Anterior Cervical Discectomy and Fusion Surgery for Degenerative Cervical Pathology. *The Spine Journal.* 2020 Jan;20(1):78-86.
  123. Bachmann KR, Lu E, Novicoff WM, Newton PO, Abel MF, Buckland A, Samdani A, **Jain A**, Lonner B, Yaszay B, Reilly C, Hedequist D, Clements D, Miyanji F, Shufflebarger H, Flynn J, Asghar J, Thiong JMM, Pahys J, Harms J, Bachmann K, Lenke L, Glotzbecker M, Kelly M, Vitale M, Marks M, Gupta M, Fletcher N, Cahill P, Sponseller P, Gabos P, Newton P, Betz R, Lehman R, George S, Hwang S, Shah S, Errico T, Upasani V. The Lumbosacral Takeoff Angle Can Be Used to Predict the Postoperative Lumbar Cobb Angle Following Selective Thoracic Fusion in Patients with Adolescent Idiopathic Scoliosis. *J Bone Joint Surg Am.* 2020 Jan 15;102(2):143-150.
  124. Pakpoor J, Raad M, Harris A, Puvanesarajah V, Canner J, Nadgir R, **Jain A**. Use of Imaging During Emergency Department Visits for Low Back Pain. *American Journal of Roentgenology.* 2020 Feb;214(2):395-399.
  125. Labaran L, Vatani J, Bell J, Puvanesarajah V, Sequeria S, Raad M, **Jain A**, Hassanzadeh H. Outcomes Following Posterior Lumbar Fusion in Polycythemia Vera Patients. *World Neurosurg.* 2020 Feb;134:e372-e378.
  126. Labaran L, Harris A, Puvanesarajah V, Amin R, Raad M, **Jain A**, Hassanzadeh H. Solid organ transplant is associated with increased morbidity and mortality in patients undergoing one or two-level anterior cervical decompression and fusion. *Spine.* 2020 Feb 1;45(3):158-162.
  127. Goldschmidt E, Angriman F, Agarwal N, Trevisan M, Zhou J, Chen K, Gerszten P, Kanter A, Okonkwo D, Passias P, Scheer J, Protosaltis T, Lafage V, Lafage R, Schwab F, Bess S, Ames C, Smith J, Shaffrey C, Miller E, **Jain A**, Neuman B, Sciubba D, Burton D, Hamilton D, ISSG. A New Piece of the Puzzle to Understand Cervical Sagittal Alignment: Utilizing a Novel Angle  $\delta$  to Describe the Relationship among T1 Vertebral Body Slope, Cervical Lordosis, and Cervical Sagittal Alignment. *Neurosurgery.* 2020 Mar 1;86(3):446-451.
  128. Marrache M, Dhanjani S, Harris A, Puvanesarajah V, Raad M., Petrusky O, Srikumaran U, **Jain A**. Geographic Variation in Physician Payments from Private Insurers for Commonly Performed In-Patient Orthopedic Surgeries in the United States. *Journal of Surgical Orthopaedic Advances.* 2021 Spring;30(1):14-19.
  129. Labaran L, Aryee J, Bell J, Jain N, Puvanesarajah V, Raad M, **Jain A**, Carmouche J, Hassanzadeh H. Opioids and Spinal Cord Stimulators: Pre and Postoperative Opioid Use Patterns and Predictors of Prolonged Postoperative Opioid Use. *Neurospine.* 2020 Mar; 17(1):246-253.
  130. Marrache M, Harris A, Puvanesarajah V, Raad M, Hassanzadeh H, Srikumaran U, Ficke J, Levy J, **Jain A**. Hospital payments increase as payments to surgeons decrease for common inpatient orthopaedic procedures. *JAAOS Global Research & Reviews.* 2020 Apr; 4(4):e2000026.
  131. Harris A, Gottlich C, Puvanesarajah V, Marrache M, Raad M, Petrusky O, Skolasky R, Njoku D, Sponseller P, **Jain A**. Factors Associated with Extended Length of Stay in Patients Undergoing Posterior Spinal Fusion for Adolescent Idiopathic Scoliosis. *Spine Deformity.* 2020 Apr; 8(2):187-193.
  132. Harris A, Puvanesarajah V, Marrache M, Gottlich C, Raad M, Skolasky R, Njoku D, Sponseller P, **Jain A**. Opioid Prescribing Practices after Posterior Spinal Arthrodesis for Adolescent Idiopathic Scoliosis. *Spine Deformity.* 2020 Oct;8(5):965-973..
  133. Marrache M, Harris A, Puvanesarajah V, Raad M, Pakpoor J, Hassanzadeh H, Bicket M, **Jain A**. Pre-Operative and Post-Operative Spending Among Working Age Adults Undergoing Posterior Spinal Fusion Surgery for Degenerative Pathology. *World Neurosurg.* 2020 Jun;138:e930-e939.
  134. Labaran L, Bell J, Puvanesarajah V, Jain N, Aryee J, Raad M, **Jain A**, Camouche J, Hassanzadeh H. Demographic Trends in Paddle Lead Spinal Cord Stimulator Placement: Private Insurance and Medicare Beneficiaries. *Neurospine.* 2020 Jun;17(2):384-389.
  135. Vivas A, Pahys J, **Jain A**, Samdani A, Bastrom T, Sponseller P, Newton P, Hwang S, Harms Study Group. Early and late hospital readmissions after spine deformity surgery in children with cerebral palsy. *Spine Deformity.* 2020 Jun;8(3):507-516.



136. Lonner B, Castillo A, **Jain A**, Sponseller P, Samdani A, Kelly M, Ames C, Eaker L, Marrache M, Shah S. The Patient Generated Index and Decision Regret In Adolescent Idiopathic Scoliosis. *Spine Deformity*. 2020 Dec;8(6):1231-1238.
137. **Jain A**, Jain P, Aggarwal S. SARS-CoV-2 Impact on Elective Orthopaedic Surgery: Implications for Post-Pandemic Recovery. *J Bone Joint Surg*. 2020 Jul 1;102(13):e68.
138. Labaran L, Jain N, Puvanesarajah V, **Jain A**, Buchholz A, Hassanzadeh H. A Retrospective Database Review of the Indications, Complications, and Incidence of Subsequent Spine Surgery in 12,297 Spinal Cord Stimulator Patients. *Neuromodulation*. 2020 Jul;23(5):634-638.
139. Buckland A, Woo D, Vasquez-Montes D, Marks M, **Jain A**, Samdani A, Betz R, Errico T, Newton P, Lonner B. The relationship between 3-dimensional spinal alignment, thoracic volume and pulmonary function in surgical correction of Adolescent Idiopathic Scoliosis (AIS) – A five-year follow-up study. *Spine*. 2020 Jul 15;45(14):983-992.
140. Eguia E, Nhan D, Shah S, **Jain A**, Samdani A, Yaszay B, Pahys J, Marks M, Sponseller P, The Harms Study Group. Of major complication types, only deep infections after spinal fusion are associated with worse health-related outcomes in children with cerebral palsy. *Spine*. 2020 Jul 15;45(14):993-999.
141. **Jain A**, Yeramaneni S, Kebaish K, Raad M, Gum J, Klineberg E, Hassanzadeh H, Kelly M, Passias P, Ames C, Smith J, Shaffrey C, Bess S, Lafage V, Glassman S, Carreon L, Hostin R, The International Spine Study Group. Cost-utility analysis of rhBMP-2 use in adult spinal deformity surgery. *Spine*. 2020 Jul 15;45(14):1009-1015.
142. Harris A, Marrache M, Puvanesarajah V, Raad M, **Jain A**, Kebaish K, Riley L, Skolasky R. Are preoperative depression and anxiety associated with patient-reported outcomes, health care payments, and opioid use after anterior discectomy and fusion? *Spine J*. 2020 Aug;20(8):1167-1175.
143. Harris A, Marrache M, Puvanesarajah V, Raad M, Skolasky R, Njoku D, Sponseller P, **Jain A**. Emergency Department Visits Following Posterior Spinal Fusion for Adolescent Idiopathic Scoliosis. *J Pediatric Orthopaedics*. 2020 Aug;40(7):e629-e633.
144. Harris A, Guadix S, Riley L, **Jain A**, Kebaish K, Skolasky R. Changes in Racial and Ethnic Disparities in Lumbar Spinal Surgery Associated with the Passage of the Affordable Care Act, 2006-2014. *Spine Journal*. 2020 Aug 5;S1529-9430(20)31007-X.
145. **Jain A**, Marrache M, Harris A, Puvanesarajah V, Neuman B, Buser Z, Wang J, Yoon ST, Meisel H. Structural allograft vs. PEEK implants in anterior cervical discectomy and fusion: a systematic review. *Global Spine J*. 2020 Sep;10(6):775-783.
146. Grabel Z, Lunati M, Segal D, Kukowski N, Yoon ST, **Jain A**. Thoracolumbar spinal fractures associated with ground level falls in the elderly: An analysis of 254,486 emergency department visits. *J Clin Orthop Trauma*. 2020 Sep-Oct;11(5):916-920.
147. Lonner B, **Jain A**, Sponseller P, Eaker L, Samdani A, Kelly M, Castillo A, Marrache M, Ames C, Shah S; Harms Study Group Investigators. What Are Parents Willing to Accept? A Prospective Study of Risk Tolerance in AIS Surgery. *Spine Deformity*. 2021 Mar;9(2):381-386.
148. Dhanjani S, Marrache M, Puvanesarajah V, Pakpoor J, **Jain A**. Annual Trends and Geographic Variation in the Utilization of Imaging in Pediatric Patients with Low Back Pain in the United States. *World Neurosurgery*. 2020 Nov 19; S1878-8750(20)32439-6.
149. Aggarwal S, Jain P, **Jain A**. COVID-19 and Cataract Surgery Backlog in Medicare Beneficiaries. *J Cataract and Refractive Surgery*. 2020 Nov;46(11):1530-1533.
150. Marrache M, Bronheim R, Harris A, Puvanesarajah V, Raad M, Lee S, Skolasky R, **Jain A**. Synthetic Cages Associated with Increased Rates of Revision Surgery and Higher Costs Compared to Allograft in ACDF in the Non-Elderly Patient. *Neurospine*. *Neurospine*. 2020 Dec;17(4):896-901.
151. Harris A, Zhang B, Marrache M, Puvanesarajah V, Raad M, Hassanzadeh H, Bicket M, **Jain A**. Chronic Opioid Use Following Lumbar Discectomy: Prevalence, Risk Factors, and Current Trends in the United States. *Neurospine*. 2020 Dec;17(4):879-887.
152. Jain N, Labaran L, Phillips F, Khan S, **Jain A**, Kebaish K, Hassanzadeh H. Prevalence of Osteoporosis Treatment and Its Effect on Post-operative Complications, Revision Surgery and Costs After Multi-level Spinal Fusion. *Global Spine J*. 2020 Dec 17.
153. Marrache M, Harris A, Puvanesarajah V, Raad M, Hassanzadeh H, Skolasky R, Bicket M, **Jain A**. Healthcare Resource Utilization in Commercially Insured Patients Undergoing Anterior Cervical Discectomy and Fusion for Degenerative Cervical Pathology. *Global Spine J*. 2021 Jan;11(1):108-115.
154. Levy J, Ippolito B, **Jain A**. Hospital revenue under Maryland's total cost of care model during the COVID-19 pandemic, March-July 2020. *JAMA*. 2021 Jan. 2021; 325(4):398-400.

155. Sciubba D, **Jain A**, Kebaish K, Neuman B, Daniels A, Passias P, Kim H, Protopsaltis T, Scheer J, Smith J, Hamilton K, Bess S, Klineberg E, Ames C, ISSG. Development of a preoperative adult spinal deformity comorbidity score that correlates with common quality and value metrics: length of stay, major complications, and patient-reported outcomes. *Global Spine J.* 2021 Mar;11(2):146-153.
156. Loebaton G, Marrache M, Puvanesarajah V, LaPorte D, **Jain A**, Aggarwal S. Gender Disparity in Composition and Compensation Among Maryland Hospital Executives. *J Health Disparities Research and Practice.* 2020 Dec Vol13 Issue 4.
157. Jami M, Marrache M, Puvanesarajah V, Raad M, Prasad N, **Jain A**. Treatment of Neck Pain with Opioids in the Primary Care Setting: Trends and Geographic Variation. *Pain Medicine.* 2021 Mar 18;22(3):740-745.
158. **Jain A**, Dai T, Myers C, Jain P, Aggarwal S. Prioritising surgical cases deferred by the COVID-19 pandemic: an ethics-inspired algorithmic framework for health leaders. *BMJ Leader.* 2021 Feb.
159. Harris A, Kebaish F, Puvanesarajah V, Raad M, Wilkening M, **Jain A**, Cohen D, Neuman B, Kebaish K. Caudally Directed Upper-Instrumented Vertebra Pedicle Screws Associated with Minimized Risk of Proximal Junctional Failure in Patients with Long Posterior Spinal Fusion for Adult Spinal Deformity. *Spine Journal.* 2021 Jul;21(7):1072-1079.
160. Rahman R, Wallam S, Zhang B, Sachdev R, McNeely E, Kebaish K, Riley L, Cohen D, **Jain A**, Lee S, Sciubba D, Skolasky R, Neuman B. Appropriate Opioid Use After Spine Surgery: Psychobehavioral Barriers and Patient Knowledge. *World Neurosurgery.* 2021 March;150:e600-e612.
161. Suresh K, Wang K, Margalit A, **Jain A**. Trends in Out-of-Pocket Healthcare Expenses before and after passage of the Affordable Care Act. *JAMA Network Open.* 2021 Apr 1;4(4):e215499.
162. Wang K, Suresh K, Puvanesarajah V, Raad M, Margalit A, **Jain A**. Using predictive modeling and machine learning to identify patients appropriate for outpatient Anterior Cervical Discectomy and Fusion. *Spine.* 2021 May 15;46(10):665-670.
163. Wang K, Ikwuezunma I, Puvanesarajah V, Babu J, Margalit A, Raad M, **Jain A**. Using Predictive Modeling and Supervised Machine Learning to Identify Patients at Risk for Venous Thromboembolism following Posterior Lumbar Fusion. *Global Spine J.* 2021 May 26;21925682211019361.
164. Aggarwal A, **Jain A**, Jain P, Sangha M, Benias P, Trindade A; and the Northwell COVID-19 Research Consortium. SARS-CoV-2 Impact on Screening Colonoscopy: Implications for Post-Pandemic Recovery. *Am J Gastroenterology.* 2021 Jun 1;116(6):1359-1360.
165. Levy J, Wang K, Ippolito B, Ficke J, **Jain A**. The Impact of the COVID19 Pandemic on Elective Inpatient Surgical Admissions: Evidence from Maryland. *J Surg Res.* 2021 Jul 24;268:389-393.
166. Marrache M, Harris A, Puvanesarajah V, Raad M, Cohen D, Riley L, Neuman B, Kebaish K, **Jain A**, Skolasky R. Persistent sleep disturbance after spine surgery is associated with failure to achieve meaningful improvements in pain and health-related quality of life. *Spine J.* 2021 Aug;21(8):1325-1331.
167. Gonzalez E, **Jain A**, Lediju Bell M. Combined ultrasound and photoacoustic image guidance of spinal pedicle cannulation demonstrated with intact ex vivo specimens. *IEEE Trans Biomed Eng.* 2021 Aug;68(8):2479-2489.
168. Lv X, Gao F, Li T, Xue P, Wang X, Wan M, Hu B, Chen H, **Jain A**, Shao Z, Cao X. Skeleton interoception regulates bone and fat metabolism through hypothalamic neuroendocrine NPY. *Elife.* 2021 Sep 1;10:e70324.
169. Annapragada A, Meshram P, Jenkins S, **Jain A**, Middleton K, Thakkar S, Levin A, Srikumaran U. Age and Racial Disparities in Telemedicine Utilization in an Academic Orthopedic Surgery Department. *Telemed J E Health.* 2022 Jul;28(7):970-975.
170. Passias P, Ahmad W, Kummer N, Lafage R, Lafage V, Kebaish K, Daniels A, Klineberg E, Soroceanu A, Gum J, Line B, Hart R, Burton D, Eastlack R, **Jain A**, Smith J, Ames C, Shaffrey C, Schwab F, Hostin R, Bess S. Examination of the Economic Burden of Frailty in Patients with Adult Spinal Deformity Undergoing Surgical Intervention. *Neurosurgery.* 2022 Jan 1;90(1):148-153.
171. Ikwuezunma I, Wang K, Margalit A, Sponseller P, **Jain A**. Cost-Utility Analysis Comparing Bracing vs. Observation for Skeletally Immature Patients with Thoracic Scoliosis. *Spine.* 2021 Dec 1;46(23):1653-1659.
172. Rahman R, Zhang B, Andrade N, Ibaseta A, Kebaish K, Riley L, Cohen D, **Jain A**, Lee S, Sciubba D, Skolasky R, Neuman B. Mental Health Associated with Postoperative Satisfaction in Lumbar Degenerative Surgery Patients. *Clinical Spine Surgery.* 2021 Dec 1;34(10):E588-E593.
173. Wang K, Margalit A, Thakkar S, Hsu N, Srikumaran U, Ficke J, **Jain A**. Reimbursement for Orthopaedic Surgeries in Commercial and Public Payors: A Race to the Bottom. *J Am Acad Orthop Surg.* 2021 Dec 1;29(23):e1232-e1238.

174. Wang K, Suresh K, Harris A, Marrache M, Puvanesarajah V, Levy J, **Jain A**. Out-of-Network Billing in Privately Insured Patients Undergoing Elective Orthopaedic Surgery is Declining. *J Am Acad Orthop Surg*. 2021 Dec 15;29(24):1072-1078.
175. Suresh K, Wang K, Sethi I, Zhang B, Margalit A, Puvanesarajah V, **Jain A**. Spine Surgery and Preoperative Hemoglobin, Hematocrit, and Hemoglobin A1c: A Systematic Review. *Global Spine Journal*. 2022 Jan;12(1):155-165.
176. Bronheim R, Kebaish K, **Jain A**, Neuman B, Skolasky R. Worsening pain and quality of life for spine surgery patients during the COVID-19 pandemic: Roles of psychological distress and patient activation. *N Am Spine Soc J*. 2022 Mar;9:100103.
177. Ikwuezunma I, Beutler G, Margalit A, **Jain A**, Kebaish K, Sponseller P. Late Spinal Infections Are More Common After Pediatric Than After Adult Spinal Deformity Surgery. *Spine Deformity*. 2022 Jul;10(4):817-823.
178. Ikwuezunma I, Guilbault R, **Jain A**, Lee R, Varghese R, Lentz J, Sponseller P, LaPorte D, Margalit A. Development and Validation of SCFE Percutaneous Pinning Surgical Simulation. *J Pediatric Orthopaedics*. 2022 Jul 1;42(6):e577-e582.
179. Margalit A, Suresh K, Marrache M, Lentz J, Lee R, Tis J, Varghese R, Hayashi B, **Jain A**, LaPorte D. Evaluation of a Slipped Capital Femoral Epiphysis Virtual Reality Surgical Simulation for the Orthopaedic Trainee. *JAAOS Global Research & Reviews*. 2022 Apr 1;6(4):e22.00028.
180. Wang K, Puvanesarajah V, Marrache M, Ficke J, Levy J, **Jain A**. Ambulatory Surgery Centers Versus Hospital Outpatient Setting for Orthopaedic Surgeries. *J Am Acad Orthop Surg*. 2022 Mar 1;30(5):207-214.
181. Annapragada A, Jenkins S, Chang A, **Jain A**, Srikumaran D, Srikumaran U. Factors Driving Rapid Adoption of Telemedicine in an Academic Orthopedic Surgery Department. *Telemed J E Health*. 2022 Mar;28(30):415-421.
182. Klyce W, Suresh K, **Jain A**, Parent S, Shah S, Cahill P, George S, Clements D, Upasani S, Yazsay B, Miyanji F, Kelly M, Lonner B, Sponseller P. Pedicle screw plowing in Adolescent Idiopathic Scoliosis: How Common is it and is it a Problem? *Spine*. 2022 Jun 15;47(12):873-878.
183. Durand W, Ortiz-Babilonia C, Badin D, Wang K, **Jain A**. Patient Out-Of-Pocket Cost Burden with Elective Orthopaedic Surgery. *J Am Acad Orthop Surg*. 2022 Jul 15;30(14):669-675.
184. Durand W, Badin D, Ortiz-Babilonia C, Musharbash F, Raad M, **Jain A**. Emergency Department Visits After Outpatient Spine Surgery. *Spine*. 2022 Jul 15;47(14):1011-1017.
185. Raad M, Ortiz-Babilonia C, Hassanzadeh H, Puvanesarajah V, Kebaish K, **Jain A**. Cost-Utility Analysis of Neoadjuvant Teriparatide Therapy in Osteopenic Patients Undergoing Adult Spinal Deformity Surgery. *Spine*. 2022 Aug 15;47(16):1121-1127.
186. Ortiz-Babilonia C, Mo K, Raad M, Ficke J, **Jain A**. Orthopaedic Surgeon Distribution in the United States Is Associated with County Level Variation in Wealth and Urbanization. *J Am Acad Orthop Surg*. 2022 Sep 15;30(18):e1188-e1194.
187. Ikwuezunma I, Wang K, Raymond S, Badin D, Kreulen R, **Jain A**, Sponseller P, Margalit A. Height Gain after Spinal Fusion for Idiopathic Scoliosis: Which Model Fits Best? *J Pediatr Orthop*. 2022 Oct 1;42(9):457-461.
188. Mo K, Ikwuezunma I, Mun F, Ortiz-Babilonia C, Wang K, Suresh K, Uppal A, Sethi I, Mesfin A, **Jain A**. Racial Disparities in Spine Surgery: A Systematic Review. *Clinical Spine Surgery*. 2022 Aug 22.
189. Gao C, Phalen H, Margalit A, Ma J, Ku P, Unberath M, Taylor R, **Jain A**, Armand M. Fluoroscopy-Guided Robotic System for Transforaminal Lumbar Epidural Injections. *IEEE Transactions on Medical Robotics and Bionics*. 2022. Nov; 4(4):901-909.
190. Durand W, Musharbash F, Ortiz-Babilonia C, **Jain A**. Characteristics of Spine Surgery Performed at Ambulatory Surgical Centers. *Spine*. 2023 Jan 15;48(2):143-145.
191. Broida S, Murakami K, Abedi A, Meisel H, Hsieh P, Wang J, **Jain A**, Buser Z, Yoon T. Clinical Risk Factors Associated with the Development of Adjacent Segment Disease in Patients Undergoing ACDF: A Systematic Review. *Spine Journal*. 2023 Jan;23(1):146-156.
192. Durand W, Ortiz-Babilonia C, Raad M, Kurian S, Cartagena-Reyes M, **Jain A**. Variation in Commercial Insurance Type Impacts Access to Cervical Spine Surgery. *Spine*. 2022 Nov 16.
193. Passias PG, Kummer N, Imbo B, Lafage V, Lafage R, Smith JS, Line B, Vira S, Schoenfeld AJ, Gum JL, Daniels AH, Klineberg EO, Gupta MC, Kebaish KM, **Jain A**, Neuman BJ, Chou D, Carreon LY, Hart RA, Burton DC, Shaffrey CI, Ames CP, Schwab FJ, Hostin RA Jr, Bess S; International Spine Study Group. Improvements in Outcomes and Cost after Adult Spinal Deformity Corrective Surgery between 2008 and 2019. *Spine*. 2023 Feb 1;48(3):189-195.
194. Yeramaneeni S, Wang K, Gum J, Line B, **Jain A**, Kebaish K, Schaffery C, Smith J, Lafage V, Schwab F, Passias P, Hamilton K, Klineberg E, Ames C, Burton D, Bess S, Hostin R. DRG Based Payments for Adult Spine Deformity

- Surgery Significantly Vary across Centers: Results from a multi-center prospective cohort study. *World Neurosurgery*. 2023 Mar;171:e153-e161.
195. Raad M, Xu A, Ortiz-Babilonia C, Marrache M, Durand W, Greenberg M, **Jain A**. A 5-Year Cost-Utility Analysis Comparing Synthetic Cage vs Allograft Use in Anterior Cervical Discectomy and Fusion Surgery for Cervical Spondylotic Myelopathy. *Spine*. 2023 Mar 1;48(5):330-334.
  196. Zuckerman SL, Berven S, Streiff MB, Kerolus M, Buchanan IA, Ha A, Bonfield CM, Buchholz AL, Buchowski JM, Burch S, Devin CJ, Dimar JR, Gum JL, Good C, Kim HJ, Kim JS, Lombardi JM, Mandigo CE, Bydon M, Oppenlander ME, Polly DW Jr, Poulter G, Shah SA, Singh K, Than KD, Spyropoulos AC, Kaatz S, **Jain A**, Schutzer RW, Wang TZ, Mazique DC, Lenke LG, Lehman RA. Management of Anticoagulation/Antiplatelet Medication and Venous Thromboembolism Prophylaxis in Elective Spine Surgery: Concise Clinical Recommendations Based on a Modified Delphi Process. *Spine*. 2023 Mar 1;48(5):301-309.
  197. Harris A, **Jain A**, Dhanjani S, Wu C, Helliwell L, Mesfin A, Menga E, Aggarwal S, Ranganathan K. Disparities in Telemedicine Literacy and Access in the United States. *Plastic and Reconstructive Surgery*. 2023 Mar 1;151(3):677-685.
  198. Trenchfield D, Murdock CJ, Destine H, **Jain A**, Lord E, Aiyer A. Trends in Racial, Ethnic, and Gender Diversity in Orthopaedic Surgery Spine Fellowships from 2007-2021. *Spine*. 2023 Oct 15;48(20):E349-E354.
  199. Shammas R, Coroneos C, Ortiz-Babilonia C, Graton M, **Jain A**, Offodile A. Implementation of the Maryland Global Budget Revenue Model and Variation in the Expenditures and Outcomes of Surgical Care: A Systematic Review and Meta-Analysis. *Annals of Surgery*. 2023 Apr 1;277(4):542-548.
  200. Offodile A, Lin YL, Shah S, Swisher S, **Jain A**, Butler C, Aliu O. Is the Centralization of Complex Surgical Procedures an Unintended Spillover Effect of Global Capitation? – Insights from the Maryland Global Budget Revenue Program. *Annals of Surgery*. 2023 Apr 1;277(4):535-541.
  201. Phalen H, Munawar A, **Jain A**, Taylor R, Armand M. Platform for Investigating Continuum Manipulator Behavior in Orthopaedics. *International Journal of Computer Assisted Radiology and Surgery*. 2023 Jul;18(7):1329-1334.
  202. Lizzappi M, Bronheim R, Raad M, Hicks C, Skolasky R, Riley L, Lee S, **Jain A**. Association of Geographic Socioeconomic Deprivation with Utilization and Costs of Anterior Cervical Discectomy and Fusion. *Spine*. 2023 Sep 15;48(18):1272-1281.
  203. Agarwal A, Prichett L, **Jain A**, Srikumaran U. Assessment of Use of ICD-9 and ICD-10 Codes for Social Determinants of Health in the US, 2011-2021. *JAMA Network Open*. 2023 May 1;6(5):e2312538.
  204. Li Q, Wang W, Liu J, **Jain A**, Armand M. Data-driven Shape Sensing of Continuum Dexterous Manipulators Using Embedded Capacitive Sensor. *IEEE SENSORS*. 2023. doi: 10.1109/SENSORS56945.2023.10324929.
  205. Naessig S, Para A, Kummer N, Krol O, Passfall L, Ahmad W, Pierce K, Vira S, Diebo B, Neuman B, **Jain A**, Sciubba D, Passias P. Trends in usage of navigation and robotic assistance in elective spine surgeries: a study of 105,212 cases from 2007 to 2015. *J Robot Surg*. 2023 Dec;17(6):2855-2860.
  206. ElNemer W, Solomon E, Raad M, **Jain A**, Lee SH. Predicting Mortality Following Odontoid Fracture Fixation in Elderly Patients: CAADS-16 Score. *Global Spine J*. 2023 Dec 1;21925682231220019.
  207. Hersh A, Jimenez A, Pellot K, Gong J, Jiang K, Khalifeh J, Ahmed K, Raad M, Veeravagu A, Ratliff J, **Jain A**, Lubelski D, Bydon A, Witham T, Theodore N, Azad T. Contemporary Trends in Minimally Invasive Sacroiliac Joint Fusion Utilization in the Medicare Population by Specialty. *Neurosurgery*. 2023 Dec 1;93(6):1244-1250.
  208. Margalit A, Phalen H, Gao C, Ma J, Vangipuram K, Jain P, Farvardin A, Taylor R, Armand M, Chhatre A, **Jain A**. Autonomous Spinal Robotic System for Transforaminal Lumbar Epidural Injections: A Proof of Concept of Study. *Global Spine Journal*. 2024 Jan;14(1):138-145.
  209. Skolsaky R, Cizik A, **Jain A**, Neuman B. Measuring value in spine care using PROMIS preference scoring system. *Journal of Bone and Joint Surgery*. 2024 Jan 3;106(1):21-29.
  210. Harris A, Benes G, Ghanem D, Reyes MC, **Jain A**, Laporte D. Using a Modern Linked Research Database to Examine Gender Disparities in Orthopaedic Grant Funding over the Past Decade. *Journal of Bone and Joint Surgery*. 2024 Jan 3;106(1):39-46.
  211. Prasad N, **Jain A**, Bronheim R, Marrache M, Njoku D, Sponseller P. Elevated preoperative blood pressure and its relationship to intraoperative mean arterial pressure and blood loss in posterior spinal fusion for adolescent idiopathic scoliosis. *Eur J Orthop Surg Traumatol*. 2024 Jan;34(1):339-345.
  212. Meisel HJ, **Jain A**, Wu Y, Martin CT, Cabrera JP, Muthu S, Hamouda WO, Rodrigues-Pinto R, Arts JJ, Viswanadha AK, Vadalà G, Vergroesen PA, Ćorluka S, Hsieh PC, Demetriades AK, Watanabe K, Shin JH, Riew KD, Papavero L, Liu G, Luo Z, Ahuja S, Fekete T, Uz Zaman A, El-Sharkawi M, Sakai D, Cho SK, Wang JC, Yoon T, Santesso N,

- Buser Z. AO Spine Guideline for the Use of Osteobiologics (AOGO) in Anterior Cervical Discectomy and Fusion for Spinal Degenerative Cases. *Global Spine J.* 2024 Feb;14(2\_suppl):6S-13S.
213. Buser Z, Meisel HJ, Agarwal N, Wu Y, **Jain A**, van Hooff M, Alini M, Yoon ST, Wang JC, Santesso N; AO Spine Knowledge Forum Degenerative. Development of an International AO Spine Guideline for the Use of Osteobiologics in Anterior Cervical Fusion and Decompression (AO-GO). *Global Spine J.* 2024 Feb;14(2\_suppl):14S-23S.
214. **Jain A**, Dhanjani S, Harris A, Cartagena M, Babu J, Riew D, Shin J, Wang J, Yoon S, Buser Z, Meisel H, AO Spine Knowledge Forum Degenerative. Structural Allograft Versus Mechanical Interbody Devices Augmented with Osteobiologics in Anterior Cervical Discectomy and Fusion: A Systematic Review. *Global Spine J.* 2024 Feb;14(2\_suppl):34S-42S.
215. Hoelen TA, Willems PC, Loenen A, Meisel HJ, Wang JC, **Jain A**, Buser Z, Arts JJ. The Evidence for the Use of Osteobiologics in Hybrid Constructs (Anterior Cervical Discectomy and Fusion and Total Disc Replacement) in Multilevel Cervical Degenerative Disc Disease: A Systematic Review. *AO Spine Knowledge Forum Degenerative. Global Spine J.* 2024 Feb;14(2\_suppl):120S-128S.
216. Anderson K, Wu R, Darden M, **Jain A**. Medicare Advantage is Associated with Lower Use of Total Joint Arthroplasty. *J Bone Joint Surg Am.* 2024 Feb 7;106(3):198-205.
217. Mo K, Ortiz-Babilonia C, Musharbash F, Raad M, Silva Aponte J, Neuman B, **Jain A**, Kebaish K. Inflation-adjusted medicare physician reimbursement for adult spinal deformity surgery substantially declined from 2002 to 2020. *Spine Deform.* 2024 Mar;12(2):263-270.
218. Badin D, Ortiz-Babilonia C, Musharbash F, **Jain A**. Disparities in Elective Spine Surgery for Medicaid Beneficiaries: A Systematic Review. *Global Spine J.* 2024 May;14(4):1443.
219. Cartagena-Reyes M, Silva-Aponte J, Nazario-Ferrer G, Benes G, Choudhary A, Raad M, Frank SM, Musharbash F, **Jain A**. The cost-utility of intraoperative tranexamic acid in adult spinal deformity patients undergoing long posterior spinal fusion. *Spine Deformity.* 2024 May;12(3):587-593.
220. Ortiz-Babilonia C, Gupta A, Cartagena-Reyes M, Xu A, Raad M, Durand W, Skolasky R, **Jain A**. The Statistical Fragility of Trials Comparing Cervical Disc Arthroplasty and Anterior Cervical Discectomy and Fusion: A Meta Analysis. *Spine.* 2024 May 15;49(10):708-714.
221. Azad TD, Jiang K, Weber-Levine C, Lee RP, **Jain A**, Sponseller P, Groves M, Theodore N, Nasr IW, Jackson EM. Evaluation of cervical spine clearance scores in children younger than 3 years with blunt trauma. *J Neurosurg Pediatr.* 2024 May 31:1-7
222. Cartagena-Reyes M, Solomon E, Silva Aponte J, Joshi A, Raad M, Hassanzadeh H, **Jain A**. Development of a Novel Risk Stratification Score to Predict 30-Day Mortality in Cervical Trauma Patients: CLAAD Score. *Clin Spine Surg.* 2024 Jul 1;37(6):275-281.
223. Haft M, Levy H, Agarwal A, Quan T, Greenberg M, Raad M, Patel T, **Jain A**. The Effect of Varying Preoperative Hemoglobin Levels on the Risk of Major Complications and Surgical Site Infections After Single Level Lumbar Fusion. *J Am Acad Orthop Surg Glob Res Rev.* 2024 Jul 10;8(7):e24.000
224. Zhao AY, Agarwal AR, Durand WM, Raad M, Seibold BT, Thakkar SC, **Jain A**. Prior Fragility Fractures are Associated With Higher Risk of Bone Health-Related Complications Within 8-Years Following Lumbar Fusion. *Spine.* 2024 Aug 1;49(15):1046-1051.
225. Cartagena-Reyes MA, Gupta M, Roy JM, Solomon E, Yenokyan G, Fogam L, Nazario-Ferrer GI, ElNemer WG, Park S, Skolasky RL Jr, **Jain A**. Gender diversity at spine surgery academic conferences: a 15-year investigation. *Spine J.* 2024 Aug;24(8):1369-1377.

### Review Articles [RA]

1. Curinga G, **Jain A**, Feldman M, Prosciak M, Phillips B, Milner S. Red blood cell transfusion following burn. *Burns.* 2011 Aug;37(5):741-51.
2. Marker D, Mont M, **Jain A**, Carrino J. Pitfalls to avoid and advancements to consider for diagnosing hip osteonecrosis on magnetic resonance imaging. *Clinical Reviews in Bone and Mineral Metabolism.* 2011;9(1):23-37.
3. **Jain A**, Hassanzadeh H, Strike S, Menga E, Sponseller P, Kebaish K. Pelvic fixation in adult and pediatric spine surgery: Historical perspective, indications, and techniques. *J Bone Joint Surg Am.* 2015 Sep 16;97(18):1521-8.
4. Nandyala S, Hassanzadeh H, **Jain A**, Sponseller P. Neuromonitoring in Pediatric Spine Surgery. *Seminars in Spine Surgery.* 2015 Dec;27(4):201-208.
5. **Jain A**, Khanna A, Hassanzadeh H. Management of Intraoperative Neuromonitoring Signal Loss. *Seminars in Spine Surgery.* 2015 Dec;27(4):229-232.

6. **Jain A**, Brooks J, Kebaish K, Sponseller P. Sacral-Alar-Iliac fixation for spinal deformity. *J Bone Joint Surg Am: Essential Surgical Techniques*. 2016 Mar;6(1):e10.
7. **Qureshi R, Puvanesarajah V, Jain A**, Hassanzadeh H. Perioperative Management of Blood Loss in Spine Surgery. *Clin Spine Surg*. 2017 Nov;30(9):383-388.
8. Strike S, Hassanzadeh H, **Jain A**, Kebaish K, Njoku D, Becker D, Ain M, Sponseller P. Intraoperative neuromonitoring in pediatric and adult spine deformity surgery. *Clin Spine Surg*. 2017 Nov;30(9):E1174-E1181.
9. **Sullivan B, Jain A**, Aziz K, Khanna A. Clinical and radiographic evaluation of adult spinal deformities. *Seminars in Spine Surgery*. 2017 Dec;166-174.
10. Lee S, Hyun S, **Jain A**. Cervical Sagittal Alignment: Literature Review and Future Directions. *Neurospine*. 2020 Sep;17(3):478-496.
11. Lee S, Prasad N, **Jain A**. Cervical fixation in the elderly. *Seminars in Spine Surgery*. 2020 Dec;100829.
12. Li TP, **Jain A**, Cao X. Sources of lumbar back pain during aging and potential therapeutic targets. *Vitamins and Hormones*. 2021;115:571-583.
13. Baghdadi S, Cahill P, Anari J, Flynn J, Upasani V, Bachmann K, **Jain A**, Baldwin K. Evidence Behind Upper Instrumented Vertebra Selection in Adolescent Idiopathic Scoliosis A Systematic and Critical Analysis Review. *JBJS Reviews*. 2021;9(9):e20.00255.
14. Humbyrd C, **Jain A**. Ethics of Cost Custodianship and Price Transparency in Orthopaedic Surgery. *J Bone Joint Surg Am*. 2022 Mar 2;104(5):e17.
15. Recommendations from the ICM-VTE: Pediatric. *J Bone Joint Surg Am*. 2022 Mar 16;104(Suppl 1): 238-251.
16. Xu A, **Jain A**, Humbyrd C. Ethical Considerations Surrounding Surgeon Ownership of Ambulatory Surgery Centers. *J Am Coll Surg*. 2022 Sep 1;235(3):539-543.
17. Anderson K, Darden M, **Jain A**. Improving Prior Authorization in Medicare Advantage. *JAMA*. 2022 Oct 18;328(15):1497-1498.
18. Usevitch D, Bronheim R, Reyes M, Babilonia C, Margalit A, **Jain A**, Armand M. Review of Enhanced Handheld Surgical Drills. *Critical Reviews in Biomedical Engineering*. 2023;51(6):29-50.

#### Case Reports [CR]

1. Mesfin A, Nesterenko S, Al-Hourani K, **Jain A**, Sponseller P. Management of hangman's fractures and a subaxial compression fracture in two children with osteogenesis imperfecta. *J Surg Orthop Adv*. 2013;22(4):326-9.
2. **Goh B, Jain A**, Sponseller P. Delayed, reversible cervical paralysis after scoliosis corrective surgery in a child with osteogenesis imperfecta. *JBJS Case Connect*. 2018 Jan-Mar;8(1):e16.
3. **Lobaton G, Marrache M**, Petrusky O, Cohen D, **Jain A**. Devastating vertebral osteomyelitis after epidural steroid injection. *JBJS Case Connect*. 2019 Dec;9(4):e0028.
4. **Dhanjani S**, Altaieb M, Margalit A, Puvanesarajah V, **Jain A**. Pediatric Back Pain Associated with Bertolotti Syndrome: A Report of Three Cases with Varying Treatment Strategies. *JBJS Case Connector*. 2021 Nov 17;11(4).

#### Group Authorship/Consortium Publications

1. COVIDSurg Collaborative, GlobalSurg Collaborative . SARS-CoV-2 vaccination modelling for safe surgery to save lives: data from an international prospective cohort study. *Br J Surg*. 2021;108(9):1056-1063.
2. COVIDSurg Collaborative; GlobalSurg Collaborative. Effects of pre-operative isolation on postoperative pulmonary complications after elective surgery: an international prospective cohort study. *Anaesthesia*. 2021;76(11):1454-1464.
3. COVIDSurg Collaborative; GlobalSurg Collaborative. Timing of surgery following SARS-CoV-2 infection: an international prospective cohort study. *Anaesthesia*. 2021 Jun;76(6):748-758.
4. COVIDSurg Collaborative; GlobalSurg Collaborative. SARS-CoV-2 infection and venous thromboembolism after surgery: an international prospective cohort study. *Anaesthesia*. 2022;77(1):28-39.
5. NIHR Global Health Research Unit on Global Surgery; STARSurg Collaborative. A prognostic model for use before elective surgery to estimate the risk of postoperative pulmonary complications (GSU-Pulmonary Score): a development and validation study in three international cohorts. *Lancet Digit Health*. 2024 Jul;6(7):e507-e519.

#### Book Chapters, Monographs [BC]

1. **Jain A**, Khanna A, Srikumaran U. Imaging of the Spine. In: *Orthopaedic Surgery Essentials: Spine*. (Ed. Bono C, Schoenfeld A). Wolters Kluwer Health: Philadelphia, PA; 2017; 13-31.
2. **Reidler J, Jain A**, Khanna A. Cervical spine trauma. In: *The Spine Handbook*. (Ed. Desai M, O'Brien J). Oxford University Press: New York, NY; 2018; 147-172.

3. **Jain A**, Riew K, Rhee J. Cervical Myelopathy. In: Bridwell and DeWald's Textbook of Spinal Surgery. (Ed. Bridwell K, Gupta M). Wolters Kluwer Health: Philadelphia, PA; 2019.
4. **Li P, Jain A**, Cao X. Sources of lumbar back pain during aging and potential therapeutic targets. In: Hormones and Aging. (Ed. Litwack G). Elsevier: Cambridge, MA;2021; 571-584.
5. **Parekh Y**, Durand W, **Jain A**. Subaxial Laminectomy and Fusion. In: Cervical Spine Surgery. (Ed. Baaj A, Than K, Baessa S, Shankar G, Daniels A). Thieme. 2024. In Press.
6. **Malik M**, Muthu S, **Jain A**. Discectomy Approaches: Microdiscectomy, Endoscopic, and Conventional. In: Low Back Ache. (Ed. Dhatt S, Kumar V). Springer Nature. 2024. In Press.

### Books, Textbooks [BK]

1. Srikumaran U, **Jain A**, Khanna A. MRI in Orthopaedics and Sports Medicine. Thieme Medical Publishers: New York, NY; 2025. In press.

### Editorials, News Articles

1. **Jain A**, Aggarwal S. COVID-19 created a surgery backlog that's only going to get worse. The Baltimore Sun. June 23, 2020.
2. **Jain A**, Dai T, Bibee K, Myers C. Covid-19 Created an Elective Surgery Backlog. How Can Hospitals Get Back on Track? Harvard Business Review. August 10, 2020.
3. **Jain A**, Humbyrd C. Keep Recurring Meetings Virtual. AAOS Now. September 27, 2021.
4. Mittal R, Jain S, Myers C, Dai T, **Jain A**. A 100% COVID Vaccination Rate is Possible. Medpage Today. October 22, 2021.
5. **Jain A**, Myers C, Patel A. Let's Realign the Surgeon-Hospital Relationship. March 5, 2022.
6. Jain D, **Jain A**. Gaining New Heights in Adult Deformity Surgery. J Bone Joint Surg Am. 2023 Sep 20;105(18):e45.

### Other Media [OM]

- 2019 **Jain A**. YouTube video. Adolescent Idiopathic Scoliosis Case Presentation for Pediatric Providers.
- 2020 **Jain A**. Interview on ABC/ WMAR News. Study shows it may take seven to 16 months for surgeons to complete backlog of elective surgeries. Recorded by Kelly Broderick. June 17, 2020.

## FUNDING

### EXTRAMURAL Funding

#### Research Extramural Funding -- Previous

- 2015-2016      Duration of Antibiotic Prophylaxis in Orthopaedic Trauma  
 Sponsor: Orthopaedic Research and Education Foundation  
 Funding: \$5000  
 Role: Principal Investigator, 1% effort/no salary support.  
 Description: Small research grant to study the role of antibiotic duration in orthopaedic trauma
- 2021-2022      Health Disparities in Spine Surgery  
 Sponsor: Gladden Orthopaedic Society  
 Funding: \$6,000  
 Role: Principal Investigator, 1% effort/no salary support.  
 Description: Small research grant to study health disparities and outcomes in spine surgery

#### Research Extramural Funding – Current

- 2021-2025      Skeleton and Joint Degeneration with Aging  
 NIH P01 grant  
 Sponsor: NIH/ National Institute on Aging  
 Funding: \$9,500,000  
 PI: Cao X  
 Role: Co-Investigator, 5% effort with salary support  
 Description: Investigate pathophysiology of spinal degeneration with aging

2022-2026      Robotic System for Spinal Decompression and Interbody Fusion  
 NIH R01 grant  
 Sponsor: NIH/ National Institute of Arthritis and Musculoskeletal and Skin Diseases  
 Funding: \$2,830,000  
 Role: Principal Investigator (multiple PI grant, with Mehran Armand), 10% effort with salary support  
 Description: Development of an active surgical robotic system for advanced applications in spinal surgery

2022-2024      DegenPro: Anterior Cervical Discectomy and Fusion Study  
 Sponsored Registry Grant  
 Sponsor: AO Spine International  
 Funding: per patient enrollment  
 Role: Principal Investigator, no salary support  
 Description: Grant to enroll patients in prospective international, multicenter spine registry

Educational Extramural Funding

2021-2023      Medtronic Spine Fellowship Grant  
 Industry grant  
 Sponsor: Medtronic  
 Funding: \$50,000  
 Role: Principal Investigator, no salary support  
 Description: grant to support Johns Hopkins spine surgery fellowship

Clinical Extramural Funding	None
System Innovation or Quality Improvement Extramural Funding	None
Other Extramural Funding	None

**INTRAMURAL Funding**

Research Intramural Funding -- Previous

2020-2021      COVID-19, Elective Surgery Deferment and the Maryland Total Cost of Care Model  
 Sponsor: Hopkins Business of Health Initiative  
 Funding: \$20,000  
 Role: Principal Investigator, 5% effort/ no salary support.  
 Description: investigate the ability of the Maryland Total Cost of Care to withstand economic shocks

2020-2022      William F. Rienhoff Jr., M.D., Scholars Program  
 Sponsor: Johns Hopkins School of Medicine  
 Funding: \$42,000  
 Role: Award Recipient.  
 Description: internal School of Medicine grant to support orthopaedic surgery quality and safety research

2022-2023      Elective Orthopaedic Surgery as a Model for Comparing Traditional Medicare vs. Medicare Advantage  
 Sponsor: Hopkins Business of Health Initiative  
 Funding: \$20,000  
 Role: Principal Investigator (co-PI: Kelly Anderson, PhD), 5% effort/ no salary support.  
 Description: analyze impact of Medicare Advantage on utilization of elective joint replacement

2023-2024      Impact of Medicare Advantage on Quality of Care: Evidence from Osteoporosis  
 Funding: \$20,000  
 Role: Principal Investigator, 5% effort/ no salary support.

Research Intramural Funding -- Current	None
Educational Intramural Funding	None
Clinical Intramural Funding	None





2021-2024	As a Steering committee member of the AO Spine International Knowledge Forum Degenerative, I co- led the global initiative focusing on development of clinical guidelines for use of osteobiologics in anterior cervical spine surgery. The guidelines set the clinical standard for the field. Published as focus issue in Global Spine Journal. Our group is now working on best practices for complication avoidance in use of enabling and emerging technologies such as navigation and augmented reality in spine surgery.
2022-2023	As part of international experts in the International Consensus on Venous Thromboembolisms work group, I developed the VTE guidelines for pediatric spinal surgery. Published as focus issue in JBJS.
2016-2020	As a member of the international Harms Study Group, I led the development and validation of a new classification system for patients with cerebral palsy to predict perioperative complications after spinal fusion surgery. This classification system has become the standard of care for treatment of these patients. Published in JBJS.

## EDUCATIONAL ACTIVITIES

### Educational Focus

My educational focus is on training orthopaedic surgery residents and fellows in principles of orthopaedic and spine surgery. As Fellowship Director for the Spine Surgery Fellowship at Johns Hopkins, I oversee the fellowship educational programs for our four clinical fellows and several research fellows, including clinic and operating room assignments, and weekly educational conferences. The didactic curriculum involves lectures and discussions two times per week.

As Director of the national Board Review Course for the American Academy of Orthopaedic Surgeons, I set the curriculum, recruit and train faculty instructors, review performance, and orchestrate nationwide resident participation. This annual course is popular and attended by over 300 Orthopaedic Surgery Residents from all over the United States and abroad annually to prepare for the American Board of Orthopaedic Surgery Part 1 written examination. In addition to directing the course, I also lecture in the course on the following topics: Orthopaedic Basic Science and Pediatric Spinal Deformity.

### Teaching

#### *Classroom Instruction*

#### JHMI/Regional

2018-Present	Weekly classroom instruction for spine surgery fellows, residents, and medical students on the Adult Spine Surgery Service. Lecture topics include: spinal stenosis, spondylolisthesis, minimally-invasive spine surgery, and adolescent idiopathic scoliosis.
2018-Present	Quarterly classroom instruction for medical students and residents rotating on the Pediatric Orthopaedic Surgery service. Lecture topics include: pediatric cervical injuries, pediatric spine trauma, and pediatric spinal deformities.
2024-Present	Fall 2024 Course: Musculoskeletal Biology and Disease. Classroom instruction to biomedical engineering students on spinal degeneration, and advances in spinal surgical treatments and robotics.

#### National

4/13/18	Faculty Lecturer, Orthopaedic surgery residents at the AAOS Board Review Course, "Preparing for the Boards: Game Plan for Final 3 Months." American Academy of Orthopaedic Surgeons, Chicago, IL
4/26/19	Faculty Lecturer, Orthopaedic surgery residents at the AAOS Board Review Course, "Orthopaedic Basic Science Review" and "Board Prep Strategies." American Academy of Orthopaedic Surgeons, Chicago, IL
4/17/20	Faculty Lecturer, Orthopaedic surgery residents at the AAOS Board Review Course, "Orthopaedic Basic Science Review." American Academy of Orthopaedic Surgeons. Virtual.
2/10/21	Visiting Professor, Orthopaedic surgery residents and fellows, "Adolescent Idiopathic Scoliosis Principles." University of Virginia, Charlottesville, VA.
4/23/21	Faculty Lecturer, Orthopaedic surgery residents at the AAOS Board Review Course, "Orthopaedic Basic Science Review." American Academy of Orthopaedic Surgeons. Virtual.
4/22/22	Faculty Lecturer, Orthopaedic surgery residents at the AAOS Board Review Course, "Orthopaedic Basic Science Review." American Academy of Orthopaedic Surgeons. Virtual.

- 4/21-22/23 Faculty Lecturer, Orthopaedic surgery residents at the AAOS Board Review Course, “Orthopaedic Basic Science Review” and “Pediatric Spine and Pediatric Infection Review.” American Academy of Orthopaedic Surgeons. Virtual.
- 3/7/24 Visiting Professor, Orthopaedic surgery residents, “Business of Health: What Residents Need to Know.” George Washington University, Washington, D.C.

International

- 10/30/19 Visiting Professor, Orthopaedic residents and fellows, “Spine Surgery Principles.” Post Graduate Institute of Medical Education and Research, Chandigarh, India.

*Clinical Instruction*

JHMI/Regional

- 2017-2018 Clinical Instructor, 2<sup>nd</sup> and 4<sup>th</sup> year Orthopaedic surgery residents; Inpatient adult spine surgery service. Emory University Orthopaedic and Spine Hospital, Atlanta, GA
- 2018-Present Attending surgeon, Spine Surgery fellows and Orthopaedic surgery residents. Inpatient adult spine surgery service. Johns Hopkins Hospital, Baltimore, MD
- 2018-Present Attending surgeon, Orthopaedic surgery residents. Inpatient pediatric orthopaedic surgery service. Johns Hopkins Children’s Center, Baltimore, MD
- 2018-Present Attending surgeon, Orthopaedic surgery residents PGY3-5; Inpatient adult spine surgery service. Howard County General Hospital, Columbia, MD

National

- 5/5/21 Invited Course Faculty, Spine Surgical Principles. Spine Pre-Fellows Course for chief residents in orthopaedics and neurosurgery. Lecture and cadaver lab based surgical techniques course. Chicago, IL.
- 3/19/22 Invited Course Instructor, Lateral Access Spine Surgery. Cadaver lab course for attending physicians in practice. New York City, NY.
- 4/28/23 Invited Course Instructor, Lateral Access Spine Surgery. Cadaver lab course for attending physicians in practice. Philadelphia, PA.
- 5/6/23 Invited Course Faculty, Cervical Spine Surgery. Spine Pre-Fellows Course for chief residents in orthopaedics and neurosurgery. Lecture and cadaver lab based surgical techniques course. Chicago, IL.
- 7/22/23 Invited Course Instructor, Fellows Final Course. Didactic course for spine surgery fellows about to start practice. Raynham, MA.
- 3/1-2/24 Invited Course Faculty, Pediatric Spinal Deformity Course. Lectures and cadaver lab course for attending physicians in practice. Miami, FL.

*CME Instruction*

JHMI/Regional

- 11/14/18 Invited Lecturer, Internal Medicine Providers, “Evaluation of the Spine Patient: What Not to Miss”. 19<sup>th</sup> Annual Internal Medicine Provider Retreat of Johns Hopkins Community Physicians, Johns Hopkins, Linthicum Heights, MD.
- 3/13/19 Invited Lecturer, Family Medicine Providers, “Evaluation of Back and Neck Pain.” JHCP Family Medicine Provider Retreat, Johns Hopkins, Mount Washington, MD.
- 2/23/22 Invited Lecturer, Johns Hopkins Advanced Practice Providers, “Spine Imaging—What Not to Miss.” Johns Hopkins Advanced Practice Providers Grand Rounds, Baltimore, MD.

National

- 03/14/19 Course Faculty, Orthopaedic Surgeons, “Lumbar Disc Herniation: Natural History and Treatment.” Instructional Course Lecture at the American Academy of Orthopaedic Surgeons, Las Vegas, NV.
- 7/17/21 Faculty Lecturer, Orthopaedic surgeons in Practice attending the AAOS Maintenance of Certification Virtual Course, “Basic Science Concepts, High-Yield Content.” American Academy of Orthopaedic Surgeons. Virtual.
- 7/16/22 Faculty Lecturer, Orthopaedic surgeons in Practice attending the AAOS Maintenance of Certification Virtual Course, “Basic Science Concepts, High-Yield Content.” American Academy of Orthopaedic Surgeons. Virtual.

- 7/14/23 Faculty Lecturer, Orthopaedic surgeons in Practice attending the AAOS Maintenance of Certification Virtual Course, “Basic Science Concepts, High-Yield Content.” American Academy of Orthopaedic Surgeons. Virtual.
- 7/20/24 Faculty Lecturer, Orthopaedic surgeons in Practice attending the AAOS Maintenance of Certification Virtual Course, “Basic Science Concepts, High-Yield Content.” American Academy of Orthopaedic Surgeons. Virtual.

### *Workshops/Seminars*

#### JHMI/Regional

- 12/20/18 Lecturer, Lunch Seminar for Howard County General Hospital Internal Medicine/Hospitalist Service, “Common Spine Patient Scenarios.” Howard County General Hospital, Columbia, MD
- 4/24/19 Director, Evening Seminar for Howard County General Hospital Staff and Patients, “When Back Pain Keeps Coming Back.” Howard County General Hospital, Columbia, MD
- 3/4/23 Spine surgery dissection lab. Workshop for spine surgery fellow education, Columbia, MD
- 7/20/23 Mobile spine surgery lab. Spine surgery workshop for resident and fellow education with cadavers and didactics. Baltimore, MD
- 3/21/24 Mobile spine surgery lab. Spine surgery workshop for resident and fellow education with cadavers and didactics. Baltimore, MD

#### National

- 6/14/18 Webinar Director, educational webinar for orthopaedic surgery residents “Basic Science Review for ABOS Part 1.” Sponsor: American Academy of Orthopaedic Surgeons, Chicago, IL. Virtual.
- 6/13/19 Webinar Director, educational webinar for orthopaedic surgery residents “Basic Science Review for ABOS Part 1.” Sponsor: American Academy of Orthopaedic Surgeons, Chicago, IL. Virtual.
- 6/1/19 Faculty Co-Organizer, Setting Scoliosis Straight Power Over Scoliosis Event. Baltimore, MD.
- 6/10/21 Webinar Director, “AAOS Board Prep Refresher Webinar.” American Academy of Orthopaedic Surgeons. Virtual.
- 6/29/21 Webinar Director, “Statistics for the Orthopaedic Surgeon.” American Academy of Orthopaedic Surgeons. Virtual.
- 11/17/23 Webinar Director, “Physician Non-Competes: Workforce Integrity and Patient Access.” Hopkins Business of Health Initiative. Virtual.

#### International

- 4/18/22 Webinar Director, Updates in Translational Research in Spine Surgery. AO Spine International Knowledge Forum Degenerative. Virtual.
- 10/12/23 Webinar Moderator, AIS Long Term Follow up. Harm Study Group and the Setting Scoliosis Foundation. Virtual. Attended by over 100 surgeons.
- 2/29/24 Webinar Director, Leaps in Treatment of Cerebral Palsy Scoliosis. Harms Study Group and the Setting Scoliosis Foundation. Virtual. Attended by over 200 surgeons from 5 continents.

### **Mentoring**

#### Pre-doctoral Advisees/Mentees

- 2014-Present Through the JHU Center for Bioengineering Innovation and Design, I mentored several JHU Engineering Undergraduate student teams on design and development of orthopaedic devices.
- 2014-2015 Varun Puvanesarajah. Medical student research fellow. Currently Assistant Professor of spine surgery at U Rochester. Multiple co-authored articles. See publication list.
- 2016-2017 Micheal Raad. Medical student research fellow. Currently spine surgery fellow at Johns Hopkins. Multiple co-authored articles. See publication list.
- 2018-2019 Andrew Harris. Medical student research fellow. Currently orthopaedic surgery chief resident at Johns Hopkins. Multiple co-authored articles. See publication list.
- 2018-2019 Majd Marrache. Medical student research fellow. Currently orthopaedic surgery chief resident at Johns Hopkins. Multiple co-authored articles. See publication list.
- 2020-2021 Kevin Wang. Medical student research fellow. Currently Orthopaedic surgery resident at Harvard. Multiple co-authored articles. See publication list.

- 2021-2022 Carlos Ortiz. Medical student research fellow. Currently Orthopaedic surgery resident at U Rochester. Multiple co-authored articles. See publication list.
- 2022-2023 Miguel Cartagena. Medical student research fellow. Currently Orthopaedic surgery resident at Miami/West Palm Beach. Multiple co-authored articles. See publication list.
- 2023-2024 Gabriel Nazario. Medical student research fellow. Multiple co-authored articles. See publication list.

#### Post-doctoral Advisees/Mentees

- 2015-2018 Sandesh Rao, MD. Orthopaedic surgeon in DC. Multiple co-authored articles. See publication list.
- 2021-2022 NIH T32 Mentor. Mentee: Adam Margalit, MD. Project: Autonomous Spinal Robotic System for Transforaminal Lumbar Epidural Injections: A Proof of Concept of Study. Currently Hand Surgery Fellow. Multiple co-authored articles. See publication list.
- 2023-2024 NIH T32 Mentor. Mentee: Alexandra Seidenstein, MD PhD. Project: Finite Element Analysis of Laminotomy and Laminectomy Procedures. Multiple co-authored articles. See publication list.

#### Thesis Committees

- 2020-2023 Henry Phalen. PhD. Advisory committee member. Primary Advisor: Russ Taylor, PhD. Research Defense on 8/30/23. Laboratory for Computational Sensing and Robotics. JHU.
- 2019-2022 Cong Gao, PhD. Advisory committee member. Primary Advisor: Mathias Unberath, PhD. Research Defense on 6/29/22. Laboratory for Computational Sensing and Robotics. JHU.
- 2019-2022 Eduardo Gonzalez, PhD. Advisory committee member. Primary Advisor: Bisi Bell, PhD. Research Defense on 5/18/22. Department of Biomedical Engineering. JHU.

#### Educational Program Building/Leadership

- 2018-Present Spine Resident and Fellow Education. I helped re-design and implement a new annual didactic curriculum for the spine surgery fellows and for the orthopaedic surgery residents that rotate on the spine service. The curriculum consists of integrated core lectures given by adult and pediatric spine surgery faculty, research conferences, and journal clubs.

Educational Demonstration Activities to external audiences                      None

## RESEARCH ACTIVITIES

### Research Focus

My research focus is on quality and safety in spine surgery, health economics, and innovations in surgical robotics. My research efforts have resulted in over 250 publications (H index 43) and have led to multiple successful international collaborations.

### Research Program Building/ Leadership

2018-Present Director, Spine Research, Dept of Orthopaedic Surgery, Johns Hopkins University. I have developed and cultivated productive research programs that aim to advance the fields of orthopaedic and spine surgery. I have focused my efforts in the following specific domains:

- 1) Quality and safety in spine surgery: I am interested in improving outcomes of adult patients undergoing spinal surgery for degenerative conditions, and pediatric patients treated for idiopathic and neuromuscular scoliosis. My focus is on developing novel surgical techniques and perioperative protocols to improve care outcomes. I contribute to prospective, multicenter observational cohorts, and use registries to analyze patient outcomes. Our work has resulted in publications in leading journals including Spine, Spine Deformity, and Global Spine Journal.
- 2) Health Economics of Musculoskeletal Care: In collaboration with scholars from Carey Business School and Bloomberg School of Public Health to study factors that drive variation in healthcare costs and assess impact of federal policies on healthcare access and equity. I am on the executive leadership team for the interdisciplinary Hopkins Business of Health Initiative. Our work has

resulted in publications in leading journals including Journal of American Medical Association, Journal of Bone and Joint Surgery, and Journal of American Academy of Orthopaedic Surgeons.

- 3) Innovations in Surgical Robotics: In partnership with engineers from the Whiting Engineering school, I develop new surgical devices and implement new techniques for minimally invasive spinal surgery. We have an active NIH R01 grant (2022-2026) to develop solutions to improve minimally invasive decompression and interbody fusion. Our research has been recognized through international collaborations and led to publications in leading journals including IEEE transactions.

2021-Present Chair, Emerging and Enabling Technologies Committee (since 2023), and Steering Committee Member (since 2021), AO Spine International Degenerative Knowledge Forum. I work with international thought leaders in spine surgery to design prospective multicenter clinical studies that advance care of patients with degenerative spinal pathologies. I co-led the group's international multicenter guideline development for spinal osteobiologics in cervical spinal surgery, which set a new industry standard. I am leading the group consensus statement on best practices for complication avoidance with enabling technologies, and the Delphi method for fusion assessment. Our work has been presented at multiple international forums and resulted in multiple prominent publications, including in Global Spine Journal.

2016-Present Associate Member, Harms Study Group, Setting Scoliosis Straight Foundation. I am Co-Director of the Johns Hopkins site and an active investigator in the Harms Study Group, which is an international group of leading pediatric spine surgeons focused on advancing the field of pediatric spinal deformities. I led the group's effort on neuromuscular risk stratification, blood loss reduction, and cost utility analyses. Our work has been presented at multiple international forums and resulted in multiple award winning publications, and have helped redefine clinical standards.

**Research Demonstration Activities** None

#### **Inventions, Patents, Copyrights**

12/21 Patent: Imaged Guided Robotic Spine Injection System

**Technology Transfer Activities** None

### **SYSTEM INNOVATION AND QUALITY IMPROVEMENT ACTIVITIES**

#### **System Innovation Focus**

My system innovation focus is on improving quality of care and reducing total costs. I actively collaborate with colleagues across the health system on this effort. For instance, in a major effort, I collaborated with the pediatric anesthesia team to develop standardized perioperative care protocols for patients undergoing pediatric spinal surgery, which were adopted as ERAS pathway for care of patients with adolescent idiopathic scoliosis. I am also the Medical Director of Value Based Care for the health system.

#### **System Innovation and Quality Improvement efforts within JHMI**

- 2018-2020 Surgeon Champion, Johns Hopkins Health System Spinal Implants Initiative. The initiative resulted in a reduction of \$7.3 Million annual spend from a prior expenditure of \$27 Million annual spend on spinal implants throughout the health system.
- 2018-2020 Member, Spine Enhanced Recovery Pathway Committee. Represented Johns Hopkins and Howard County General Hospital to develop standardized ERAS pathway for adult spine care across the Johns Hopkins Health System
- 2018-2020 Member, ZBOR3 Perioperative Operations/Kaizen Committee, Johns Hopkins Hospital. The aim of the committee is to improve operative efficiency and quality of care provided through ZBOR3.
- 2022-2023 Member, JHHS Perioperative Play Book Committee, Johns Hopkins Health System. The aim of the committee is to standardize policies and processes in perioperative care across the health system.

### **System Innovation and Quality Improvement efforts outside of JHMI**

- 2017-2021 As a member of the Harms Study group, I led the group effort to analyze factors associated with increased blood loss in high risk (neuromuscular) pediatric spine cases. We summarized our findings and recommendations for blood management through a series of publications which set the standard for perioperative management in children undergoing spinal fusion surgery for deformity (OR-8,27,81).
- 2022-2023 As a Steering committee member of the AO Spine KF Degen, I led the group's effort to understand the factors that result in variability in fusion outcomes after ACDF surgery. This is a multicenter international research and quality improvement effort.

### **System Innovation and Quality Improvement Program Building/Leadership**

- 2022-Present Clinician Leader, Episode Quality Improvement Program. I am leading the Hopkins ortho spine group effort to reduce potentially avoidable waste, readmissions, and episodic costs as a participant in the Maryland HSCRC EQIP initiative.
- 2024-Present Medical Director, Value Based Care, Office of Population Health, Johns Hopkins Health System. I focus on developing system level strategies to reduce total cost of care through reduction in preventable utilization and improvements in transitions of care. I also focus on bundled payment and value based contracts with key payors.

## **ORGANIZATIONAL ACTIVITIES**

### **Institutional Administrative Appointments**

- 2014-2017 Member, Resident Education Committee, Orthopaedic Surgery, Johns Hopkins University
- 2015-2017 Member, Resident Advocacy Group, Orthopaedic Surgery, Johns Hopkins University
- 2018-Present Chief, Minimally Invasive Spine Surgery, Orthopaedic Surgery, Johns Hopkins
- 2018-Present Director, Spine Research, Johns Hopkins
- 2018-Present Member, Spine Enhanced Recovery Pathway Committee, Johns Hopkins Hospital
- 2018-2020 Member, ZBOR3 Perioperative Operations/Kaizen Committee, Johns Hopkins Hospital
- 2018-2020 Surgeon Champion, Johns Hopkins Health System Spinal Implants Initiative, Johns Hopkins Medicine
- 2019-2020 Surgeon Leader, Johns Hopkins Health System Bone Biologics Initiative, Johns Hopkins Medicine
- 2020-Present Member, Spine Implant and Device Approval Committee, Johns Hopkins Health System
- 2022-2023 Member, JHHS Perioperative Play Book Committee, Johns Hopkins Health System
- 2022-Present Spine Fellowship Co-Director, Orthopaedic Surgery, Johns Hopkins University, Baltimore, MD
- 2022-Present Director of Business Development and Strategy, Dept of Orthopaedic Surgery, Johns Hopkins
- 2024-Present Medical Director, Value Based Care, Johns Hopkins Health System, Baltimore, MD

### **Editorial Activities**

- 2020 Associate Editor of Seminars in Spine Surgery issue on Perioperative Considerations in Spinal Surgery in the Elderly

### **Editorial Board appointments**

- 2020-Present Editorial Board Member, Spine Deformity
- 2022-Present Deputy Editor, Bone Research

### **Journal Peer Review Activities**

- 2018-Present Journal of Bone and Joint Surgery; flagship journal in orthopaedic surgery
- 2018-Present Spine Journal; flagship journal in spine surgery
- 2020-Present Global Spine Journal; prominent journal in spine surgery

**Other peer review activities** None

### **Advisory Committees, Review Groups, Study Sections**

- 2014-2017 Member, International Spine Study Group (research group on adult spinal deformity surgery)  
I led the group's efforts on development and validation of SRS7, a new patient reported outcome tool.

- 2017-Present Associate Member, Harms Study Group (research group on pediatric spinal deformity surgery) I led the group's efforts on studying variation in blood loss during pediatric deformity surgery.
- 2018-2021 Associate Member, Degenerative Knowledge Forum, AO Spine (research group on degenerative spinal conditions). I led the group's effort on comparing autograft vs. PEEK for interbody fusion during cervical surgery.
- 2021-Present Steering Committee Member, Degenerative Knowledge Forum, AO Spine. I am leading the group's international multicenter cervical spine research effort.
- 2020-Present Scoliosis Research Society, Health Policy Committee
- 2022-Present Cervical Spine Research Society, Abstract Review Committee and Instructional Course Committee
- 2023-Present AANS/CNS Spine Summit Health Economics Committee

### **Professional Societies**

- 2012-Present American Academy of Orthopaedic Surgeons. Active fellow 2022-Present.
- 2018-Present AO Spine International Knowledge Forum Degenerative. Steering Committee member 2021-Present.
- 2018-Present Scoliosis Research Society. Active fellow 2022-Present. Previously candidate member.
- 2018-Present Cervical Spine Research Society. Active fellow 2022-Present. Previously candidate member.
- 2021-Present American College of Surgeons. Active Fellow.

### **Conference Organizer**

#### **JHMI/Regional**

- 04/22-23/19 Co-Director, International Symposium on Spine and Bone Mineral Research. Hosted at the Center for Musculoskeletal Research at Johns Hopkins, Baltimore, MD
- 6/1/19 Site Organizer, Power Over Scoliosis Event by Setting Scoliosis Straight Foundation. Hosted at Johns Hopkins, Baltimore, MD

#### **National**

- 9/10/20 Lunchtime Symposium Chair. Topic: Innovations in Spinal Deformity Correction. Scoliosis Research Society Annual International Meeting. Phoenix, AZ.
- 4/9-11/21 Program Committee Member, Annual Interdisciplinary Conference on Orthopaedic Value Based Care. Newport Beach, CA.
- 6/3/22 Symposium Chair. Topic: Updates in DVT/PE Prophylaxis in Spine Surgery. Global Spine Congress Annual Meeting. Las Vegas, USA.
- 6/4/22 Research Session Chair. Topic: Degenerative lumbar: Radiologic. Global Spine Congress Annual Meeting. Las Vegas, USA.

#### **International**

- 5/23/20 Symposium Chair. Topic: Update on ACDF, Grafts and Devices. Global Spine Congress Annual Meeting. Rio de Janeiro, Brazil.
- 11/6/21 Symposium Chair. Topic: Controversies in Cervical Disc Arthroplasty. Global Spine Congress Annual Meeting. Paris, France.
- 6/2/23 Research Session Chair. Topic: Contemporary Surgery for Adolescent Deformity. Global Spine Congress Annual Meeting. Prague, Czech Republic.
- 6/3/23 Symposium Chair. Topic: Degenerative Spondylolisthesis: Advances in treatment. Global Spine Congress Annual Meeting. Prague, Czech Republic.
- 5/17/24 Symposium Chair. Topic: Hybrid Constructs in Cervical Spine. Global Spine Congress Annual Meeting. Bangkok, Thailand.
- 5/18/24 Symposium Chair. Topic: Best Practices in Emerging and Enabling Technologies. Global Spine Congress Annual Meeting. Bangkok, Thailand.

### **Consultantships**

- 2017-2019 Spine Surgery consultant for the Practicing Wisely Initiative, Oliver Wyman
- 2020-present Spine Surgery consultant for Stryker spine
- 2020-present Spine Surgery consultant for DePuy spine
- 2020-present Spine Surgery consultant for Globus spine



## RECOGNITION

### Awards, Honors

- 2024 Avant Garde Top 1% Spine Researcher in United States
- 2023 Baltimore Magazine Top Doctor in Spine Surgery
- 2022 American Orthopaedic Association North American Travelling Fellowship
- 2021 Steering Committee Member, AO Spine International KF Degenerative
- 2020 William F. Rienhoff, Jr., M.D. Scholars Award, Johns Hopkins University
- 2017 Miller-Coulson Award for Clinical Excellence as a Resident, Johns Hopkins University
- 2017 Ronald Byank Chief Resident Award for Servant Leadership, Johns Hopkins Orthopaedic Surgery
- 2017 Best Resident Researcher Award, Dept of Orthopaedic Surgery, Johns Hopkins Orthopaedic Surgery
- 2017 Elected to Alpha Omega Alpha as House Officer
- 2016 John H. Moe Award for Best Poster at Scoliosis Research Society
- 2016 Thomas E. Whitecloud Award for Best Clinical Paper at IMAST
- 2016 Selected to attend the American Orthopaedic Association Resident Leadership Forum
- 2016 Selected to attend the Value Based Health Care Delivery Intensive Seminar at Harvard Business School
- 2016 Scoliosis Research Society OrthoPediatrics Resident Scholarship
- 2015 AAOS/OREF Resident Research Grant
- 2015 Selected to attend the AAOS/OREF/ORS Clinician Scholar Development Program
- 2014 Best Clinical Paper, International Congress on Early Onset Scoliosis
- 2012 Best Scientific Paper, National Medical Association- Orthopaedic Section
- 2012 Graduation Speaker at Johns Hopkins School of Medicine
- 2011 Russell A. Hibbs Award for Best Clinical Paper at Scoliosis Research Society
- 2010 Paul and Daisy Soros Fellow
- 2010 Rhodes Scholarship Finalist
- 2008 Elected to Phi Beta Kappa Honor Society
- 2007 Elected to Tau Beta Pi Honor Society
- 2007 Best Poster Award, 8th Annual UC System-wide Bioengineering Symposium
- 2004 U.S. Air Force Association Scholarship
- 2004 UC Berkeley Alumni Scholarship
- 2004 Folsom High School Valedictorian

### Invited Talks

#### JHMI/Regional

- 4/27/17 Grand Rounds Speaker, Johns Hopkins Orthopaedic Surgery, “From Volume to Value: Implications for Orthopaedic Surgery,” Baltimore, MD.
- 6/10/17 Grand Rounds Speaker, Johns Hopkins Orthopaedic Surgery, “Cost Utility Analysis of Adolescent Idiopathic Scoliosis,” Baltimore, MD.
- 11/01/18 Invited Lecturer, University of Maryland Orthopaedic residents, “Orthopaedic Basic Science.” University of Maryland, Baltimore, MD
- 11/13/18 Invited Lecturer, Johns Hopkins Anesthesia/Pain Management education, “Evaluation of the Spine Patient.” Johns Hopkins University, Baltimore, MD
- 11/14/18 Faculty Guest Lecturer, Internal Medicine Providers, “Evaluation of the Spine Patient: What Not to Miss”. 19<sup>th</sup> Annual Internal Medicine Provider Retreat of Johns Hopkins Community Physicians, Johns Hopkins, Linthicum Heights, MD.
- 12/20/18 Guest Speaker, Howard County General Hospital Internal Medicine team, “Evaluation of neck and back pain.” Howard County General Hospital, Columbia, MD.
- 4/22/19 Invited speaker, Spine basic science researchers, “Treatment of discogenic back pain.” International Symposium on Spine and Bone Mineral Research, Baltimore, MD.
- 4/24/19 Invited Lecturer, Howard County General Hospital Patient Seminar, “When Back Pain Keeps Coming Back.” Howard County General Hospital, Columbia, MD.
- 6/27/19 Grand Rounds Speaker, Johns Hopkins Orthopaedic Surgery, “Evaluation of Degenerative Spinal Conditions,” Baltimore, MD.

- 5/7/21 Invited Talk, "Evaluation of the Spine Patient: What Not to Miss". 65<sup>th</sup> Annual Tumulty Topics in Clinical Medicine, Johns Hopkins. Baltimore, MD. Virtual.
- 5/26/21 Invited Speaker, JH Alumni Association, "Backs and the Future." Johns Hopkins University. Virtual.
- 5/27/21 Grand Rounds Speaker, Johns Hopkins Orthopaedic Surgery, "Economic Impact of COVID and the Maryland Total Cost of Care Model," Baltimore, MD. Virtual.
- 2/23/22 Grand Rounds Speaker to Johns Hopkins Advance Practice Providers, "Spinal Imaging and What Not to Miss," Baltimore, MD. Virtual.
- 10/24/23 Visiting Professor and Grand Rounds Speaker at Sinai Hospital, Baltimore. Talk on: "Scoliosis, Innovation, and Value in Health Care."

### **National**

- 3/14/19 Faculty Lecturer, Orthopaedic Surgeons at AAOS Annual Meeting, "Lumbar Disc Herniation: Natural History and Treatment." Instructional Course Lecture at the American Academy of Orthopaedic Surgeons Annual Meeting, Las Vegas, NV
- 9/10/20 Invited Speaker, "Innovations in Pediatric and Adult Spinal Deformity Surgery." Scoliosis Research Society, Phoenix, AZ.
- 11/13/20 Invited Grand Rounds Speaker, "Impact of the pandemic on Orthopaedic care." Northwestern University, Dept of Orthopaedic Surgery, Chicago, IL. Virtual.
- 12/10/20 Invited Grand Rounds Speaker, "Impact of the pandemic on Orthopaedic care." Emory University, Dept of Orthopaedic Surgery, Atlanta, GA. Virtual.
- 2/3/21 Visiting Professor and Grand Rounds Speaker. Brown University, Dept of Orthopaedic Surgery, Providence, RI. Virtual.
- 2/10/21 Visiting Professor and Grand Rounds Speaker. University of Virginia, Dept of Orthopaedic Surgery, Charlottesville, VA. Virtual.
- 3/17/21 Invited Grand Rounds Speaker, University of New Mexico, Dept of Orthopaedic Surgery, NM. Virtual.
- 4/19/21 Visiting Professor and Grand Rounds Speaker, Oregon Health and Science University, Dept of Orthopaedic Surgery, Portland, OR. Virtual.
- 5/11/21 Invited Speaker, "Statistics and Epidemiology for the Orthopaedic Surgeon." Food and Drug Administration, Office of Health Technology: Office of Orthopedic Devices. Virtual.
- 9/3/21 Faculty Lecturer, Orthopaedic Surgeons at AAOS Annual Meeting, "Lumbar Disc Herniation: Natural History and Treatment." Instructional Course Lecture at the American Academy of Orthopaedic Surgeons Annual Meeting, San Diego, CA.
- 6/3-4/22 Invited Speaker at Global Spine Congress 2022. Talks on: "Risk Assessment for DVT/PE in Spine Surgery" in Symposium on Controversies in DVT/PE Prophylaxis in Spine Surgery; "Case Debate of Degenerative Spondylolisthesis: I Always Go Posterior" in Symposium on Lordosis Correction and Advanced Surgical Techniques; "How to Manage Patients Who Refuse Blood Products" in Symposium on Surgical Blood Loss Prevention and Management. Las Vegas, USA.
- 10/8/22 Visiting Scholar at Stanford University. Talk on: "Minimally Invasive Spine Surgery: Current and Future Directions." Palo Alto, CA.
- 10/10/22 Visiting Scholar at University of California, San Francisco. Talk on: "Health Economics and Business of Health in the United States." San Francisco, CA.
- 10/11/22 Visiting Scholar at University of California, Davis. Talk on: "Robotics and Spinal Surgery." Sacramento, CA.
- 10/14/22 Visiting Scholar at University of California, Irvine. Talk on: "Minimally Invasive Spine Surgery." Irvine, CA.
- 10/19/22 Visiting Scholar at Naval Medical Center San Diego. Talk on: "History of Hopkins Medicine." San Diego, CA.
- 10/21/22 Visiting Scholar at University of Nevada Las Vegas. Talk on: "Robotic and Minimally Invasive Spine Surgery." Las Vegas, NV.
- 10/24/22 Visiting Scholar at University of Colorado. Talk on: "Business of Medicine and Orthopaedic Surgery." Denver, CO.
- 10/26/22 Visiting Scholar at University of Arizona. Talk on: "Robotic and Minimally Invasive Spine Surgery." Phoenix, AZ.

- 3/3/23 Invited Speaker, “Managing Complications in Complex Spine Surgery.” Spinal Deformity and Complex Spine Surgery Symposium. Virtual.
- 3/5/23 Invited Speaker, “Enabling Technologies and Techniques in Spinal Deformity Surgery.” Spine Summit. Miami, FL.
- 9/10/23 Invited Speaker, “Management of Stiff CP Curves” AACPD M Cerebral Palsy Scoliosis Course. Chicago, IL.
- 9/10/23 Invited Speaker, “Pelvic Obliquity Management in CP” AACPD M Cerebral Palsy Scoliosis Course. Chicago, IL.
- 10/7/23 Visiting Professor at Brown University. Talk on: “Building a Productive Clinical and Research Practice.” Providence, Rhode Island.
- 3/7/24 Visiting Professor at George Washington University. Talk on: “Innovations in Pediatric Spinal Deformity Surgery.” Washington DC.

### International

- 2/14-15/17 Invited Guest, First Affiliated Hospital, Xinjiang Medical University. Talks on: “Surgical Management of Spinal Deformity in Patients with Cerebral Palsy” and “Orthopaedic Training and Graduate Medical Education in the United States,” Urumqi, China.
- 10/30-31/19 Visiting Professor of Spine Surgery at Post Graduate Institute of Medical Education and Research. Talks on: “Evaluation of Spinal Degenerative Conditions” and on “Principles of Managing Pediatric Spinal Deformities.” Chandigarh, India.
- 11/1/19 Invited Keynote Speaker at 6th Annual Conference of the Minimally Invasive Spine Surgeons Association of Bharat. “Use of Robotics in Spine Surgery.” Zirakpur, India.
- 9/9/20 Symposium Moderator at Scoliosis Research Society Annual Meeting. Topic: “Innovations in Spinal Deformity Correction: Time for Individualized Medicine.” Virtual.
- 2/28/21 Invited Speaker at Scoliosis Research Society International Webinar. Topic: “The Balancing Act: Building an Adult and Pediatric Spine Practice.” Virtual.
- 11/5-6/21 Invited Speaker at Global Spine Congress 2021. Talks on: “Evidence for ACDF Interbodies, Bone vs. Synthetic” in Symposium on Bone Biologics; “Indications, Patient Selection and Technical Pearls on Cervical Arthroplasty” in Symposium on Cervical Arthroplasty. Paris, France.
- 10/3/22 Visiting Scholar at University of British Columbia. Talk on: “Business of Health in the United States.” Vancouver, Canada.
- 10/6/22 Visiting Scholar at University of Calgary. Talk on: “Health Economics and Orthopaedic Surgery.” Calgary, Canada.
- 6/3/23 Invited Speaker at Global Spine Congress 2023. Talk on: “Robotic MIS Fusion.” Prague, Czech Republic.
- 5/17-18/24 Invited Speaker at Global Spine Congress 2024. Talks on: “Future of Enabling and Technologies in Spine Surgery” and “Updates on Latest Trends in Cervical Hybrids.” Bangkok, Thailand.
- 7/1/24 Visiting Professor of Spine Surgery at Peking Union Medical College. Talk on: “Advanced Strategies for Management of Pediatric Spinal Deformities.” Beijing, China.

### OTHER PROFESSIONAL ACCOMPLISHMENTS

#### Posters

- 9/26-29/07 Ulrich T, **Jain A**, Kumar S. Mechanobiology of Glioblastoma Multiforme. Biomedical Engineering Society (BMES) Annual Meeting in Los Angeles, CA.
- 6/21-24/10 Sponseller P, **Jain A**, Lenke L, Shah S, Sucato D, Emans J, Newton P. Vertebral Column Resection in children with neuromuscular spine deformity. 18<sup>th</sup> International Meeting on Advanced Spine Techniques (IMAST) in Toronto, Canada.
- 2/15-19/11 **Jain A**, Stein B, Skolasky R, Jones L, Hungerford M. Total joint arthroplasty in patients with Rheumatoid Arthritis: a United States experience from 1992 through 2005. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting in San Diego, CA.
- 3/7/11 Hassanzadeh H, **Jain A**, El Dafrawy M, Mesfin A, Skolasky R, Ain M, Kebaish K. Vertebral Column Resection (VCR) and Pedicle Subtraction Osteotomy in the treatment of spinal deformity in adult patients 60 years and older: outcome and complications. Maryland Orthopaedic Association (MOA) Annual Meeting in Baltimore, MD.

- 4/9-13/11 **Jain A**, Amin A, Jain P, Bettgowda C, Jallo G. Subependymoma: clinical features and surgical outcomes. American Association of Neurological Surgeons (AANS) Annual Meeting in Denver, CO.
- 4/9-13/11 **Jain A**, Amin A, Jain P, Bettgowda C, Jallo G. Sporadic spinal Hemangioblastomas. American Association of Neurological Surgeons (AANS) Annual Meeting in Denver, CO.
- 7/13-16/11 Hassanzadeh H, **Jain A**, El Dafrawy M, Mesfin A, Ain M, Skolasky R, Kebaish K. Functional outcome and complications following revision surgery in adult spinal deformity stratified by age: younger vs. older than 65 years. 18<sup>th</sup> International Meeting on Advanced Spine Techniques (IMAST) in Copenhagen, Denmark.
- 7/13-16/11 Hassanzadeh H, **Jain A**, El Dafrawy M, Mesfin A, Skolasky R, Ain M, Kebaish K. Vertebral Column Resection (VCR) and Pedicle Subtraction Osteotomy in the treatment of spinal deformity in adult patients 60 years and older: outcome and complications. 18<sup>th</sup> International Meeting on Advanced Spine Techniques (IMAST) in Copenhagen, Denmark.
- 7/13-16/11 Hassanzadeh H, **Jain A**, Neubauer P, Mesfin A, Kebaish K, Stein B, Ain M. Incidence of allograft contamination during intraoperative processing in patients with spinal deformity correction surgery. 18<sup>th</sup> International Meeting on Advanced Spine Techniques (IMAST) in Copenhagen, Denmark.
- 7/13-16/11 Hassanzadeh H, Gjolaj J, El Dafrawy M, **Jain A**, Skolasky R, Kebaish M. Staging regimen in adult spinal deformity surgery significantly impact functional outcome, complications and total hospital days. 18<sup>th</sup> International Meeting on Advanced Spine Techniques (IMAST) in Copenhagen, Denmark.
- 9/14-17/11 Mesfin A, **Jain A**, Hassanzadeh H, Kebaish K. Outcomes of long spinal fusions for scoliosis patients with Rheumatoid Arthritis. Scoliosis Research Society (SRS) 46<sup>th</sup> Annual Meeting in Louisville, KY.
- 11/2-5/11 Hassanzadeh H, **Jain A**, El Dafrawy M, Khanna J, Mesfin A, Neubauer P, Skolasky R, Kebaish K. Clinical results and functional outcome in adult patients following surgical treatment for spinal deformity: primary vs. revision. North American Spine Society (NASS) Annual Meeting in Chicago, IL.
- 11/2-5/11 Hassanzadeh H, **Jain A**, El Dafrawy M, Mesfin A, Skolasky R, Ain M, Kebaish K. Vertebral Column Resection (VCR) and Pedicle Subtraction Osteotomy in spinal deformity correction in adult patients 60 years and older. North American Spine Society (NASS) Annual Meeting in Chicago, IL.
- 2/7-11/12 Hassanzadeh H, **Jain A**, El Dafrawy M, Khanna AJ, Neubauer P, Mesfin A, Skolasky R, Kebaish K. Clinical results and Functional outcome in Adult Patients Following surgical treatment for Spinal Deformity: Primary vs. Revision. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting, San Francisco, CA.
- 2/7-11/12 Hassanzadeh H, Gjolaj J, El Dafrawy M, **Jain A**, Cohen D, Kebaish M. Staging regimen in adult spinal deformity surgery significantly impact functional outcome, complications & total hospital days. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting, San Francisco, CA.
- 2/7-11/12 Hassanzadeh H, **Jain A**, El Dafrawy M, Skolasky R, Kebaish M. The Anchor Type in Spinal Deformity Surgery Significantly Impact the Incidence of Proximal Junctional Kyphosis. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting, San Francisco, CA.
- 3/7-10/12 Amin A, Wu H, Pradilla G, **Jain A**, Jallo G, Gokaslan Z, Hsu W. DVT Prophylaxis in Primary Spinal Cord Tumor Resection. 28<sup>th</sup> Annual meeting of the American Association of Neurological Surgeons (AANS)/ Congress of Neurological Surgeons (CNS) Section on Disorders of the Spine and Peripheral Nerves in Orlando, FL.
- 4/14-18/12 Amin A, Wu H, Pradilla G, **Jain A**, Jallo G, Gokaslan Z, Hsu W. DVT Prophylaxis in Primary Spinal Cord Tumor Resection. American Association of Neurological Surgeons (AANS) 80<sup>th</sup> annual meeting in Miami, FL.
- 4/14-18/12 Amin A, Crabill G, Pradilla G, **Jain A**, Lim M, Rigamonti D, Hsu W. Spinal Epidural Abscess: Clinical Features and Surgical Outcomes. American Association of Neurological Surgeons (AANS) 80<sup>th</sup> annual meeting in Miami, FL.
- 4/14-18/12 **Jain A**, Amin A, Bettgowda C, Jallo G. Pleomorphic Xanthoastrocytomas: Clinical Presentation, Radiological Features and Surgical Outcomes. American Association of Neurological Surgeons (AANS) 80<sup>th</sup> annual meeting in Miami, FL.
- 4/14-18/12 **Jain A**, Ruzevick J, Amin A, Bettgowda C, Jallo G. Glioblastoma Multiforme in Children. American Association of Neurological Surgeons (AANS) 80<sup>th</sup> annual meeting in Miami, FL.
- 07/18-21/12 **Jain A**, Sponseller P. Factors Associated with Use of Bone Morphogenetic Protein During Pediatric Spinal Fusion Surgery: An Analysis of 3,924 Patients. 19<sup>th</sup> International Meeting on Advanced Spine Techniques (IMAST) in Istanbul, Turkey.

- 07/18-21/12 El Dafrawy M, Neubauer P, Hassanzadeh H, **Jain A**, Alapatt M, Kebaish K. Spontaneous Reduction of Low-Grade Spondylolisthesis by Positioning on the Operating Table: Does it Really Occur? 19<sup>th</sup> International Meeting on Advanced Spine Techniques (IMAST) in Istanbul, Turkey.
- 07/18-21/12 El Dafrawy M, Hassanzadeh H, **Jain A**, Neubauer P, Cohen D, Kebaish K. Focal and global correction following 3 column osteotomies of the lumbar spine in adult deformity patients: A comparative radiographic analysis between Pedicle Subtraction Osteotomy and Vertebral Column Resection. 19<sup>th</sup> International Meeting on Advanced Spine Techniques (IMAST) in Istanbul, Turkey.
- 07/18-21/12 Stein B, Hassanzadeh H, **Jain A**, Lemma M, Cohen D, Skolasky R, Kebaish K. Cervical spine fusion in patients with Rheumatoid Arthritis: A US Experience from 1992 to 2008. 19<sup>th</sup> International Meeting on Advanced Spine Techniques (IMAST) in Istanbul, Turkey.
- 10/24-27/12 Mesfin A, **Jain A**, Buchowski J. A Nationwide Perspective on the Surgical Treatment for Hyperostotic Disorders of the Spine: Ankylosing Spondylitis and DISH. North American Spine Society (NASS) Annual Meeting in Dallas, TX.
- 12/6-8/12 Stein B, Hassanzadeh H, **Jain A**, Lemma M, Cohen D, Skolasky R, Kebaish K. Cervical Spine Fusion in Patients with Rheumatoid Arthritis: A United States Experience from 1992 through 2008. Cervical Spine Research Society (CSRS) Annual Meeting in Chicago, IL.
- 03/19-23/13 El Dafrawy M, Hassanzadeh H, **Jain A**, Neubauer P, Cohen D, Kebaish K. Comparative radiographic analysis between Pedicle Subtraction Osteotomy and Vertebral Column Resection. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Chicago, IL.
- 03/19-23/13 El Dafrawy M, Neubauer P, Hassanzadeh H, **Jain A**, Alapatt M, Kebaish K. Spontaneous Reduction of Low-Grade Spondylolisthesis by Positioning on the Operating Table: Does it Really Occur? American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Chicago, IL.
- 03/19-23/13 **Jain A**, Sponseller P. Thromboembolic Complications in Children with Spinal Fusion Surgery. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Chicago, IL.
- 5/1-4/13 **Jain A**, Kebaish K, Sponseller P. Factors Associated With the Use of BMP During Pediatric Spinal Fusion Surgery: An Analysis Of 4817 Patients. Pediatric Orthopaedic Society of North American (POSNA) Annual Meeting in Toronto, Canada.
- 7/10-13/13 **Jain A**, Menga E, Hassanzadeh H, Jain S, Mesfin A. Treatment of Spina Bifida with Spinal Fusion Surgery: Demographics, Complications and Mortality. International Meeting on Advanced Spine Techniques (IMAST) in Vancouver, Canada.
- 7/10-13/13 **Jain A**, Wohlgenut J, Sponseller P. Analysis of Unplanned Hospital Readmissions Following Pediatric Spinal Fusion Surgery. International Meeting on Advanced Spine Techniques (IMAST) in Vancouver, Canada.
- 7/10-13/13 **Jain A**, Kebaish K, Sponseller P. Factors Associated with the Use of BMP during Pediatric Spinal Fusion Surgery: An Analysis of 4817 Children. International Meeting on Advanced Spine Techniques (IMAST) in Vancouver, Canada.
- 9/18-21/13 **Jain A**, Menga E, Hassanzadeh H, Jain S, Mesfin A. Treatment of Spina Bifida with Spinal Fusion Surgery: Demographics, Complications and Mortality. Scoliosis Research Society (SRS) Annual Meeting in Lyon, France.
- 9/18-21/13 **Jain A**, Wohlgenut J, Sponseller P. Analysis of Unplanned Hospital Readmissions Following Pediatric Spinal Fusion Surgery. Scoliosis Research Society (SRS) Annual Meeting in Lyon, France.
- 9/18-21/13 **Jain A**, Kebaish K, Sponseller P. Factors Associated with the Use of BMP during Pediatric Spinal Fusion Surgery: An Analysis of 4817 Children. Scoliosis Research Society (SRS) Annual meeting in Lyon, France.
- 3/11-15/14 **Jain A**, Hassanzadeh H, Strike S, Kebaish K. Spino-pelvic alignment and relationship to sagittal balance. Scientific Exhibit. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting in New Orleans, LA.
- 3/11-15/14 Menga E, Kebaish K, **Jain A**, Carrino J, Sponseller P. Clinical Results and Functional Outcomes after Direct Intralaminar Screw Repair of Spondylolysis. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting in New Orleans, LA.
- 7/16-19/14 Menga E, Hirschfield C, **Jain A**, Caine H, Njoku N, Karol L, Sponseller P. Intraoperative Cardiopulmonary Arrest in Pediatric Patients Undergoing Spinal Deformity Correction: Associated Factors. International Meeting on Advanced Spine Techniques (IMAST) in Valencia, Spain.

- 9/10-13/14 Modhia U, **Jain A**, Shah S, Newton P, Miyanji F, Marks M, Bastrom T, Sponseller P. Long-Term Follow Up of Deep SSI after Spinal Fusion in Cerebral Palsy: Recurrence Rare, but Lower HRQOL. Scoliosis Research Society (SRS) Annual Meeting in Anchorage, AK.
- 9/10-13/14 Hassanzadeh H, **Jain A**, Menga E, Sponseller P. Posterolateral Discectomies as Alternative to Anterior Posterior Spinal Fusion in Children with Severe Spinal Deformities. Scoliosis Research Society (SRS) Annual Meeting in Anchorage, AK.
- 11/6-9/14 **Jain A**, Ponnusamy K, Thakkar S, Sterling R, Khanuja H. Factors Associated with Increased Length of Stay Following Total Hip Arthroplasty. American Association of Hip and Knee Surgeons (AAHKS) Annual Meeting in Dallas, TX.
- 3/24-28/15 Thakkar S, Ponnusamy K, **Jain A**, Sterling R, Dorr L, Khanuja H. An Overview of the Outcomes of Technological Advances in Performing Total Hip Arthroplasty. Scientific Exhibit. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Las Vegas, NV.
- 3/24-28/15 Ponnusamy K, **Jain A**, Thakkar S, Skolasky R, Sterling R, Khanuja H. Mortality and Morbidity for Sickle Cell Patients Undergoing a Primary Total Hip Arthroplasty. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Las Vegas, NV.
- 3/24-28/15 **Jain A**, Sponseller P, Modhia U, Shah S, Thompson G, Emans J, Pawelek J, Akbarnia B, Growing Spine Study Group. Can a “Final Fusion” Procedure be Avoided in EOS Patients Who Reach Skeletal Maturity After Growing Rod Treatment? American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Las Vegas, NV.
- 4/29-05/2/15 **Jain A**, Sponseller D, Newton P, Shah S, Cahill P, Betz R, Samdani A, Bastrom T, Marks M, Harms Study Group. Smaller Patients Lose A Greater Proportion of Their Blood Volume During Posterior Spinal Arthrodesis. Pediatric Orthopaedic Society of North America (POSNA) Annual Meeting in Atlanta, GA.
- 4/29-05/2/15 **Jain A**, Brooks J, Rao S, Sponseller P. Pediatric Cervical Fractures With Associated Spinal Cord Injury: Epidemiology, Costs, And In-Hospital Mortality In 4418 Children. Pediatric Orthopaedic Society of North America (POSNA) Annual Meeting in Atlanta, GA.
- 4/29-05/2/15 Hassanzadeh H, **Jain A**, Menga E, Sponseller P. Posterolateral Discectomies As Alternative To Anterior Posterior Spinal Fusion In Children With Severe Spinal Deformities. Pediatric Orthopaedic Society of North America (POSNA) Annual Meeting in Atlanta, GA.
- 4/29-05/2/15 Modhia U, **Jain A**, Shah S, Newton P, Marks M, Bastrom T, Miyanji F, Sponseller P. Long-Term Follow Up Of Deep Infection In Cerebral Palsy Spine Surgery: Recurrence Rare But Lower HRQOL. Pediatric Orthopaedic Society of North America (POSNA) Annual Meeting in Atlanta, GA.
- 4/29-05/2/15 Brooks J, **Jain A**, Perez-Grueso F, Skaggs D, Thompson G, Akbarnia B, Sponseller P, Growing Spine Study Group. Pelvic Anchors In Growing Rod Constructs: Better Pelvic Obliquity Correction With Iliac Fixation Compared With Sacral Fixation At A Minimum Of 4 Years Of Follow-Up. Pediatric Orthopaedic Society of North America (POSNA) Annual Meeting in Atlanta, GA.
- 4/29-05/2/15 Bazzi A, Brooks J, **Jain A**, Ain M, Tis J, Sponseller P. Is Non-Operative Treatment Of Pediatric Type I Open Fractures Safe And Effective? Pediatric Orthopaedic Society of North America (POSNA) Annual Meeting in Atlanta, GA.
- 10/14-17/15 ISSG, Scheer J, Keefe M, Kelly M, Lafage V, Bess S, Burton D, Hart R, **Jain A**, Protosaltis T, Hostin R, Shaffrey C, Smith J, Schwab F, Ames C. Quantifying Risk Aversion and Likelihood of Decision Regret in the Preoperative Evaluation of the Adult Deformity Patient. North American Spine Society (NASS) Annual Meeting in Chicago, IL.
- 10/14-17/15 Konbaz F, Ramji A, **Jain A**, Neuman B. Post-Operative Changes in Lumbar Lordosis and Proximal Junctional Angle are Risk Factors for the Development of Proximal Junctional Kyphosis. North American Spine Society (NASS) Annual Meeting in Chicago, IL.
- 2/1/16 **Jain A**, Karas D, Skolasky R, Sponseller P. Thromboembolic complications in children after spinal fusion surgery. Johns Hopkins High Value Research Symposium in Baltimore, MD.
- 2/1/16 **Jain A**, Puvanesarajah V, Menga E, Sponseller P. Unplanned Hospital Readmissions and Reoperations After Pediatric Spinal Fusion Surgery. Johns Hopkins High Value Research Symposium, Baltimore, MD.
- 2/1/16 Bazzi A, Brooks J, **Jain A**, Ain M, Tis J, Sponseller P. Is nonoperative treatment of pediatric type I open fractures safe and effective? Johns Hopkins High Value Research Symposium in Baltimore, MD.

- 3/1-5/16 **Jain A**, Kuwabara A, Kebaish K, Sponseller P. Sacral-Alar-Iliac (SAI) Fixation in Children with Neuromuscular Scoliosis: Minimum 5-Year Follow-Up. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Orlando, FL.
- 3/1-5/16 Hsu N, **Jain A**, Ponnusamy K, Srikumaran U, McFarland E. Cardiovascular Complication Following Shoulder Arthroplasty: Incidence, Associated Factors, and Mortality. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Orlando, FL.
- 4/14-15/16 Puvanesarajah V, **Jain A**, Hess D, Shimer AL, Shen FH, Hassanzadeh H. Complications and Mortality after Lumbar Spinal Fusion in Elderly Patients with Late Stage Renal Disease. Lumbar Spine Research Society (LSRS) Annual Meeting in Chicago, IL.
- 4/14-15/16 Puvanesarajah V, **Jain A**, Shimer A, Li X, Singla A, Shen F, Hassanzadeh H. Complications and Mortality Following 1 to 2 Level Lumbar Fusion Surgery in Patients Above 80 Years of Age. Lumbar Spine Research Society (LSRS) Annual Meeting in Chicago, IL.
- 4/14-15/16 Puvanesarajah V, Cancienne J, Werner B, **Jain A**, Singla A, Shimer A, Shen F, Hassanzadeh H. Perioperative Complications Associated with Posterolateral Spine Fusions: a Study of Elderly Medicare Beneficiaries. Lumbar Spine Research Society (LSRS) Annual Meeting in Chicago, IIL.
- 4/15-17/16 Puvanesarajah V, **Jain A**, Hess D, Shimer A, Shen F, Hassanzadeh H. Complications and Mortality after Lumbar Spinal Fusion in Elderly Patients with Late Stage Renal Disease. Virginia Orthopedic Society Annual Meeting in Williamsburg, VA.
- 4/15-17/16 Puvanesarajah V, **Jain A**, Cancienne J, Shimer A, Singla A, Shen F, Hassanzadeh H. BMP Use and the Risk of Revision Surgery Following Long Posterolateral Fusions in the Elderly. Virginia Orthopedic Society Annual Meeting in Williamsburg, VA.
- 4/15-17/16 Yildirim B, Puvanesarajah V, An H, **Jain A**, Shen F, Hassanzadeh H. Lumbosacral Epidural Lipomatosis: a Matched Control Study. Virginia Orthopedic Society Annual Meeting in Williamsburg, VA.
- 4/15-17/16 Puvanesarajah V, **Jain A**, Shimer A, Shen F, Hassanzadeh H. The effect of coagulopathies on perioperative complications and clinical outcomes in patients treated with posterior lumbar fusions. Virginia Orthopedic Society Annual Meeting in Williamsburg, VA.
- 9/21-24/16 Poorman G, Passias P, Buckland A, Jalai C, Kelly M, Sciubba D, Neuman B, Hamilton D, **Jain A**, Lafage V, Bess S. Comparative Analysis of Peri-operative Outcomes Using Nationally Derived Hospital Discharge Data Relative to a Prospective Multicenter Surgical Database of Adult Spinal Deformity Surgery. Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.
- 9/21-24/16 Puvanesarajah V, Cancienne J, Werner B, **Jain A**, Singla A, Shimer A, Shen F, Hassanzadeh H. Perioperative Complications Associated with Posterolateral Spine Fusions: A Study of Elderly Medicare Beneficiaries. Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.
- 9/21-24/16 **Jain A**, Kebaish F, Lenke L, Dahl B, Cheung K, Pellisé F, Qiu Y, Fehlings M, Ames C, Matsuyama Y, Mehdiian H, Schwab F, Carreon L, Shaffrey C, Kebaish K. Geographical Variations in Practice Patterns and Outcomes in Surgically Treated Adult Spinal Deformity Patients: A ScoliRisk-1 Sub-analysis. Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.
- 9/21-24/16 **Jain A**, Kebaish K, Carreon L, Lafage V, Hassanzadeh H, Neuman B, Sciubba D, Gupta M, Burton D, Ames C, Hostin R, Bess S, Kelly M. SF-6D Health Utility can be Reliably Estimated from SRS-22r and ODI in Patients with Adult Spinal Deformity. Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.
- 9/21-24/16 **Jain A**, Kelly M, Samdani A, Lenke L, Lonner B, Shah S, Newton P, Marks M, Sponseller P. Are Health Related Quality of Life Outcomes Stably Maintained Between 1-Year and 5-Year Follow-up in Surgically Treated Patients with Adolescent Idiopathic Scoliosis? Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.
- 9/21-24/16 **Jain A**, Hassanzadeh H, Puvanesarajah V, Klineberg E, Kelly M, Hamilton D, Lafage V, Buckland A, Passias P, Protosaltis T, Lafage R, Smith J, Shaffrey C, Kebaish K. Medical Complications in 3,519 Surgically Treated Elderly Patients with Adult Spinal Deformity: Comparison of Multicenter Surgeon Maintained vs. Medicare Claims Database. Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.
- 9/21-24/16 Puvanesarajah V, Shen F, Cancienne J, **Jain A**, Shimer A, Hassanzadeh H. Risk Factors for Revision Surgery Following Primary Adult Spinal Deformity Surgery in Patients 65 Years and Older. Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.

- 9/21-24/16 **Jain A**, Kebaish F, Lenke L, Qiu Y, Matsuyama Y, Dahl B, Cheung K, Pellisé F, Fehlings M, Ames C, Mehdian H, Schwab F, Carreon L, Shaffrey C, Kebaish K. Incidence of Proximal Junctional Kyphosis in Patients with Adult Spinal Deformity Fused to the Pelvis: A ScolioRisk-1 Sub-analysis. Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.
- 9/21-24/16 **Jain A**, Kebaish F, Lenke L, Ames C, Fehlings M, Qiu Y, Matsuyama Y, Dahl B, Cheung K, Pellisé F, Mehdian H, Schwab F, Carreon L, Shaffrey C, Kebaish K. Early Postoperative Surgical Site Infections in the Scolio-Risk 1 Cohort of Complex Spinal Deformity Patients Still Allowed For Improved Health Related Quality of Life Outcomes at 2 Year Follow-Up. Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.
- 10/5-7/16 Pellisé F, **Jain A**, Naef F, Lenke L, Qiu Y, Matsuyama Y, Ames C, Fehlings M, Dahl B, Cheung K, Mehdian H, Schwab F, Carreon L, Shaffrey C, Kebaish K. Impact of depression on health related quality of life (HRQOL) outcomes in surgically treated adult spinal deformity patients – a Scolio-RISK-1 sub-analysis. Eurospine Annual Meeting in Berlin, German.
- 10/5-7/16 Pellisé F, **Jain A**, Naef F, Lenke L, Qiu Y, Matsuyama Y, Ames C, Fehlings M, Dahl B, Cheung K, Mehdian H, Schwab F, Carreon L, Shaffrey C, Kebaish K. Geographical variations in practice patterns and outcomes in surgically treated adult spinal deformity patients – a Scolio-RISK-1 sub-analysis. Eurospine Annual Meeting in Berlin, German.
- 10/19-22/16 Gans I, **Jain A**, Sirisreeterux N, Haut E, Hasenboehler E. Perioperative Antibiotic Usage for Long Bone Fracture Fixation Varies Considerably. Eastern Orthopaedic Association (EOA) Annual Meeting. In New Orleans, LA.
- 10/26-29/16 Puvanesarajah V, **Jain A**, Cancienne J, Shimer A, Shen F, Hassanzadeh H. BMP Use and the Risk of Revision Surgery Following Long Posterolateral Fusions in the Elderly. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 Buckland A, Puvanesarajah V, **Jain A**, Klineberg E, Vigdorichik J, Schwarzkopf R, Shaffrey C, Smith J, Hart R, Ames C. Dislocation of Primary Total Hip Arthroplasty is More Common in Patients with Lumbar Spinal Fusion. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 Hamilton K, Buza J, Passias P, Jalai C, Kim H, Hart R, Ailon T, Gupta M, Ames C, Deviren V, Daniels A, Lafage V, Bess S, Klineberg E, Shaffrey C, **Jain A**, Smith J, ISSG. The Fate of Adult Spinal Deformity (ASD) Patients Incurring Rod Fracture after Thoracolumbar Fusion without Prior Three-Column Osteotomy. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 Puvanesarajah V, Cancienne J, Werner B, **Jain A**, Singla A, Shimer A, Shen F, Hassanzadeh H. Perioperative Complications Associated with Posterolateral Spine Fusions: A Study of Elderly Medicare Beneficiaries. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 Puvanesarajah V, **Jain A**, Hess D, Shimer A, Shen F, Hassanzadeh H. Complications and Mortality after Lumbar Spinal Fusion in Elderly Patients with Late Stage Renal Disease. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 **Jain A**, Kelly M, Padula W, Lenke L, Errico T, Kebaish K, Sponseller P. Cost Utility Analysis of Operative versus Non-Operative Treatment for Adolescent Idiopathic Scoliosis. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 Poorman G, Passias P, Buckland A, Jalai C, Kelly M, Sciubba D, Neuman B, Hamilton D, **Jain A**, Lafage V, Bess S, Klineberg E, ISSG. Comparative Analysis of Perioperative Outcomes Using Nationally Derived Hospital Discharge Data Relative to a Prospective Multicenter Surgical Database of Adult Spinal Deformity Surgery. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 Miller E, Neuman B, Sciubba D, Scheer J, Smith J, Mundis G, Daniels A, **Jain A**, Ailon T, Kebaish K, Schwab F, Lafage V, Klineberg E, Ames C, ISSG. Comparison of Frailty Based on Cervical and Global SVA Classification. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 Miller E, **Jain A**, Daniels A, Neuman B, Soroceanu A, Ailon T, Sciubba D, Bess S, Line B, Lafage V, Scheer J, Kebaish K, Smith J, Ames C, ISSG. Assessment of a Novel Adult Spinal Deformity (ASD) Frailty Index (ASD-FI) to Assist with Risk Stratification for ASD Surgery. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 3/14-18/17 **Jain A**, Lenke L, Kebaish F, Fehlings M, Ames C, Carreon L, Dahl B, Schwab F, Shaffrey C, Kebaish K. Impact of Depression on Health-Related Quality of Life Outcomes in Surgically Treated Adult Spinal Deformity Patients. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting in San Diego, CA.



- 3/19-22/17 **Jain A**, Hassanzadeh H, Puvanesarajah V, Sciubba D, Buckland A, Klineberg E, Kelly M, Passias P, Lafage V, Lafage R, Shaffrey C, Smith J, Kebaish K. Perioperative Medical Complications and Mortality Rate Among 3,519 Elderly Patients Undergoing Surgery for Spinal Deformity. Orthopaedic Research Society (ORS) Annual Meeting in San Diego, CA.
- 9/6-9/17 Yeramaneni S, **Jain A**, Gum J, Kelly M, Glassman S, Polly D, Kebaish K, Burton D, Ames C, Smith J, Shaffrey C, Sethi R, Bess S, Hostin R, International Spine Study Group. Cost-Effectiveness and Clinical Effectiveness in Adult Spinal Deformity Patients: Results from a Prospective, Multicenter Study. Scoliosis Research Society (SRS) Annual Meeting in Philadelphia, PA.
- 9/6-9/17 Raad M, Amin R, **Jain A**, Kebaish K. Predictors of High Cost in Adult Spine Deformity Surgery. Scoliosis Research Society (SRS) Annual Meeting in Philadelphia, PA.
- 9/6-9/17 Gum J, **Jain A**, Carreon L, Hostin R, Yeramaneni S, Glassman S, Kelly M, Burton D, Polly D, Smith J, Shaffrey C, Schwab F, Sethi R, Neuman B, Ames C, Bess S, International Spine Study Group. Planned Staging of Complex ASD Surgery Does Not Result in Increased Length of Stay or Increased Cost. Scoliosis Research Society (SRS) Annual Meeting in Philadelphia, PA.
- 9/6-9/17 Raad M, Gupta M, Hassanzadeh H, **Jain A**, Neuman B, Burton D, Mundis G, Lafage V, Klineberg E, Daniels A, Hostin R, Ames C, Bess S, Sciubba D, Kebaish K, International Spine Study Group. The S2AI Technique Has a Lower Complication Rate Compared to Iliac Screws: A Multicenter Study of 418 Adult Spinal Deformity Patients. Scoliosis Research Society (SRS) Annual Meeting in Philadelphia, PA.
- 3/6-10/18 Qureshi R, Wener B, Puvanesarajah V, **Jain A**, Sciubba D, Shimer A, Hassanzadeh H. Factors Affecting Long-Term Postoperative Narcotic Use in Discectomy Patients. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting in New Orleans, LA. Mar 6-Mar 10, 2018.
- 3/6-10/18 Qureshi R, Puvanesarajah V, **Jain A**, Mesfin A, Singla A, Shimer A, Shen F, Hassanzadeh H. Medicare Reimbursement Variations following Complications in Anterior Cervical Fusions. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting in New Orleans, LA.
- 5/14-18/18 Yoon S, **Jain A**, Hobson S, Yoon E, Boden S, Heller J, Rhee J. Older age is independently associated with increased hospital charges and resource utilization in degenerative lumbar surgery: an analysis of 2,010 cases at a single institution. International Society for the Study of the Lumbar Spine (ISSLS) Annual Meeting in Banff, Canada.
- 5/14-18/18 Yoon S, **Jain A**, Hobson S, Yoon E, Boden S, Heller J, Rhee J. Obesity is associated with increased OR time, hospital stay, and postoperative wound complications in lumbar fusion surgery: analysis of 1,196 cases at a single institution. International Society for the Study of the Lumbar Spine (ISSLS) Annual Meeting in Banff, Canada.
- 10/10-13/18 Puvanesarajah V, Horowitz J, **Jain A**, Gjolaj J, Shen F, Hassanzadeh H. Fragility Fracture Risk in Elderly Patients with Cervical Myelopathy. Scoliosis Research Society (SRS) Annual Meeting in Bologna, Italy.
- 10/10-13/18 Nhan D, **Jain A**, Sponseller P, Sullivan B, Shah S, Samdani A, Yaszay B, Abousamra O, Cahill P, Marks M, Newton P, Harms Study Group. Outcomes of Spinal Fusion in Children with Cerebral Palsy: Are We Getting Better? Scoliosis Research Society (SRS) Annual Meeting in Bologna, Italy.
- 03/12-16/19 Klyce W, **Jain A**, Parent S, Shah S, Cahill P, George S, Clements D, Upsani V, Yaszay B, Miyajima F, Kelly M, Lonner B, Marks M, Newton P, Sponseller P, Harms Study Group. Pedicle Screw Plowing in Adolescent Idiopathic Scoliosis: How Common Is It, and Is It a Problem? AAOS Annual Meeting in Las Vegas, Nevada.
- 03/12-16/19 **Jain A**, Hobson S, Yoon E, Boden S, Heller J, Rhee J, Yoon S. Obesity is Associated with Worse Perioperative Outcomes and Increased Costs in Lumbar Fusion Surgery: Analysis of 1,196 Cases at a Single Institution. AAOS Annual Meeting in Las Vegas, Nevada.
- 03/12-16/19 Horowitz J, Puvanesarajah V, **Jain A**, Li X, Shimer A, Shen F, Hassanzadeh H. Perioperative Allogenic Red Blood Cell Transfusion is Associated with Surgical Site Infection Following Posterior Lumbar Interbody Fusion Surgery in the Elderly. AAOS Annual Meeting in Las Vegas, Nevada.

### Oral/Podium Presentations

- 3/4-7/10 **Jain A**, Erkula G, Leet A, Ain M, Sponseller P. Fractures at pediatric implants: a 15-year review. Pediatric Orthopaedic Society of North America (POSNA) Annual Meeting in Waikoloa, HI.
- 11/5-7/10 **Jain A**, Stein B, Skolasky R, Jones L, Hungerford M. Total joint arthroplasty in patients with Rheumatoid Arthritis: A United States experience from 1992 through 2005. American Association of Hip and Knee Surgeons (AAHKS) Annual Meeting in Dallas, TX.

- 2/15-19/11 **Jain A**, Erkula G, Leet A, Ain M, Sponseller P. Fractures at pediatric implants: a 15-year review. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting in San Diego, CA.
- 5/19-22/11 Hassanzadeh H, **Jain A**, El Dafrawy M, Khanna J, Mesfin A, Neubauer P, Skolasky R, Kebaish K. Clinical results and functional outcome in adult patients following surgical treatment for spinal deformity: primary vs. revision. The Spine Study Group 22nd Symposium in Palm Beach, FL.
- 6/3-4/11 Hassanzadeh H, **Jain A**, El Dafrawy M, Khanna J, Mesfin A, Neubauer P, Skolasky R, Kebaish K. Clinical results and functional outcome in adult patients following surgical treatment for spinal deformity: primary vs. revision. American College of Spine Surgery (ACSS) Annual Meeting in Las Vegas, NV.
- 6/3-4/11 Hassanzadeh H, Gjolaj J, El Dafrawy M, **Jain A**, Skolasky R, Kebaish M. Staging regimen in adult spinal deformity surgery significantly impact functional outcome, complications and total hospital days. American College of Spine Surgery (ACSS) Annual Meeting in Las Vegas, NV.
- 7/13-16/11 Mesfin A, **Jain A**, Hassanzadeh H, El Dafrawy M, Kostuik J, Kebaish K. Surgical outcomes of long spinal fusions for scoliosis in adult patients with Rheumatoid Arthritis. 18<sup>th</sup> International Meeting on Advanced Spine Techniques (IMAST) in Copenhagen, Denmark.
- 7/13-16/11 Mesfin A, **Jain A**, Mohamed A, Hassanzadeh H, Kebaish K. Total en bloc spondylectomy: a North American experience. 18<sup>th</sup> International Meeting on Advanced Spine Techniques (IMAST) in Copenhagen, Denmark.
- 7/20-23/11 Hassanzadeh H, **Jain A**, Tan E, Stein B, Van Hoy M, Stewart N, Lemma M. Compliance with Incentive Spirometry use in the orthopaedic ward. Southern Orthopaedic Association (SOA) 28<sup>th</sup> Annual Meeting in Big Island, HI.
- 9/14-17/11 Hassanzadeh H, **Jain A**, El Dafrawy M, Khanna J, Neubauer P, Mesfin A, Skolasky R, Kebaish K. Clinical results and functional outcome in adult patients following surgical treatment for spinal deformity: primary vs. revision. Scoliosis Research Society (SRS) Annual Meeting in Louisville, KY.
- 9/14-17/11 Hassanzadeh H, Gupta S, **Jain A**, El Dafrawy M, Skolasky R, Kebaish K. The anchor type at the proximal fusion level has significant effect on the incidence of proximal junctional kyphosis (PJK) and outcome in adults following long posterior spinal fusion. Scoliosis Research Society (SRS) Annual Meeting in Louisville, KY.
- 10/1-6/11 Hassanzadeh H, Gjolaj J, El Dafrawy M, **Jain A**, Skolasky R, Kebaish M. Staging regimen in adult spinal deformity surgery significantly impact functional outcome, complications and total hospital days. Congress of Neurological Surgeons (CNS) Annual Meeting in Washington, DC.
- 11/2-5/11 Hassanzadeh H, Gupta S, **Jain A**, El Dafrawy M, Skolasky R, Kebaish K. The anchor type at the proximal fusion level has significant effect on the incidence of proximal junctional kyphosis (PJK) and outcome in adults following long posterior spinal fusion. North American Spine Society (NASS) Annual Meeting in Chicago, IL.
- 11/2-5/11 Hassanzadeh H, **Jain A**, El Dafrawy M, Mesfin A, Ain M, Skolasky R, Kebaish K. Clinical results and functional outcome in adult patients following revision surgery for spinal deformity correction: patients age 65 years and older vs. younger than 65 years. North American Spine Society (NASS) Annual Meeting in Chicago, IL.
- 3/7-10/12 Amin A, Crabill G, Pradilla G, **Jain A**, Lim M, Rigamonti D, Hsu W. Spinal Epidural Abscess: Clinical Features and Surgical Outcomes. 28<sup>th</sup> Annual meeting of the American Association of Neurological Surgeons (AANS)/ Congress of Neurological Surgeons (CNS) Section on Disorders of the Spine and Peripheral Nerves in Orlando, FL.
- 7/18-21/12 **Jain A**, Sponseller P, Mesfin A. National Trends, Hospital Costs and Complications of Spinal Fusion for Scheuermann's Kyphosis: Analysis of 2,796 Patients. 19<sup>th</sup> International Meeting on Advanced Spine Techniques (IMAST) in Istanbul, Turkey.
- 7/18-21/12 **Jain A**, Njoku D, Sponseller P. Does Patient Diagnosis Predict Blood Loss during Posterior Spinal Fusion in Children? 19<sup>th</sup> International Meeting on Advanced Spine Techniques (IMAST) in Istanbul, Turkey.
- 7/28-8/1/12 **Jain A**, Menga E, Jain P, Mesfin A. Treatment of Cauda Equina Syndrome: Does Race Matter? National Medical Association (NMA) Annual Convention and Scientific Assembly in New Orleans, LA.
- 9/5-8/12 **Jain A**, Sponseller P. Pediatric Cervical Fractures with Associated Spinal Cord Injury. Scoliosis Research Society (SRS) Annual Meeting in Chicago, IL.
- 9/5-8/12 **Jain A**, Sponseller P. Thromboembolic Complications in Children with Spinal Fusion Surgery. Scoliosis Research Society (SRS) Annual Meeting in Chicago, IL.

- 10/24-27/12 Mesfin A, **Jain A**, Menga E. National Complication Rate and Trends in the Management of Ossification of the Posterior Longitudinal Ligament: Analysis of 2,594 Patients. North American Spine Society (NASS) Annual Meeting in Dallas, TX.
- 10/24-27/12 Mesfin A, **Jain A**, Menga E. National Trends in the Treatment of Thoracic Disc Herniation with Myelopathy. North American Spine Society (NASS) Annual Meeting in Dallas, TX.
- 10/24-27/12 Stein B, Hassanzadeh H, **Jain A**, Lemma M, Cohen D, Skolasky R, Kebaish K. Cervical Spine Fusion in Patients with Rheumatoid Arthritis: A United States Experience from 1992 through 2008. North American Spine Society (NASS) Annual Meeting in Dallas, TX.
- 12/6-8/12 Mesfin A, Hassanzadeh H, **Jain A**, Menga E, Riew KD. Complications and Trends in the Management of Ossification of the Posterior Longitudinal Ligament: Analysis of 2,594 Patients Stratified by Procedure, Age, Sex and Race. Cervical Spine Research Society (CSRS) Annual Meeting in Chicago, IL.
- 3/19-23/13 Stein B, Hassanzadeh H, Jakoi A, **Jain A**, Mesfin A, Lemma M, Cohen D, Kebaish K. Cervical Spine Fusion in Patients with Rheumatoid Arthritis: A United States Experience from 1992 through 2008. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Chicago, IL.
- 3/19-23/13 **Jain A**, Menga E, Jain S, Hassanzadeh H, Mesfin A. National Trends in the Treatment of Thoracic Disc Herniation with Myelopathy. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Chicago, IL.
- 5/1-4/13 **Jain A**, Thompson J, Sponseller P. Pediatric Implant Related Fractures After Proximal Femoral Osteotomies: Blade Plates Vs. Screw and Side Plate Constructs. Pediatric Orthopaedic Society of North American (POSNA) Annual Meeting in Toronto, Canada.
- 5/1-4/13 **Jain A**, Sponseller P. Thromboembolic Complications in Children with Spinal Fusion Surgery. Pediatric Orthopaedic Society of North American (POSNA) Annual Meeting in Toronto, Canada.
- 7/10-13/13 Menga E, Kebaish K, **Jain A**, Carrino J, Sponseller P. Clinical Results and Functional Outcomes after Direct Intralaminar Screw Repair of Spondylolysis. International Meeting on Advanced Spine Techniques (IMAST) in Vancouver, Canada.
- 10/9-12/13 Menga E, **Jain A**, Kebaish K, Zimmerman S, Sponseller P. Anatomic Parameters for Intralaminar Screw Repair of Spondylolysis. North American Spine Society (NASS) Annual Meeting in New Orleans, LA.
- 10/9-12/13 Menga E, Kebaish K, **Jain A**, Carrino J, Sponseller P. Clinical Results and Functional Outcomes after Direct Intralaminar Screw Repair of Spondylolysis. North American Spine Society (NASS) Annual Meeting in New Orleans, LA.
- 7/16-19/14 **Jain A**, Puvanesarajah V, Menga E, Sponseller P. Unplanned Hospital Readmissions Following Pediatric Spinal Fusion Surgery: Rate and Associated Factors. International Meeting on Advanced Spine Techniques (IMAST) in Valencia, Spain.
- 7/16-19/14 **Jain A**, Sponseller P, Modhia U, Shah S, Thompson G, Emans J, Pawelek J, Akbarnia B, Growing Spine Study Group. Can a "Final Fusion" Procedure be Avoided in Early Onset Scoliosis Patients Who Reach Skeletal Maturity After Growing Rod Treatment? International Meeting on Advanced Spine Techniques (IMAST) in Valencia, Spain.
- 9/10-13/14 **Jain A**, Sponseller P, Negrini S, Newton P, Cahill P, Bastrom T, Marks M, Harms Study Group. SRS7: A Valid, Reliable, Responsive, and Unidimensional Functional Outcome Measure for Operatively Treated Patients with AIS. Scoliosis Research Society (SRS) Annual Meeting in Anchorage, AK.
- 11/20-21/14 Brooks J, **Jain A**, Perez-Gruoso F, Skaggs D, Thompson G, Akbarnia B, Sponseller P, Growing Spine Study Group. Pelvic Anchor Outcomes in Growing Rod Constructs: An Analysis of Patients with a Minimum of 4 Years of Post-Operative Follow-Up. International Congress on Early Onset Scoliosis and Growing Spine (ICEOS) Annual Meeting in Warsaw, Poland.
- 11/20-21/14 **Jain A**, Sponseller P, Modhia U, Shah S, Thompson G, Pawelek J, Akbarnia B, Growing Spine Study Group. Can a "No Final Fusion" Produce Equal Results to Final Fusion After Growing Rod Treatment? International Congress on Early Onset Scoliosis and Growing Spine (ICEOS) Annual Meeting in Warsaw, Poland.
- 11/20-21/14 Hassanzadeh H, Nandyala S, Manning B, **Jain A**, Hammerberg K. Radiographic Parameters Correlating with Success of Mehta Cast Utilization in Infantile Idiopathic Scoliosis. International Congress on Early Onset Scoliosis and Growing Spine (ICEOS) Annual Meeting in Warsaw, Poland.
- 3/24-28/15 Ponnusamy K, **Jain A**, Thakkar S, Skolasky R, Sterling R, Khanuja H. Mortality and Morbidity for Sickle Cell Patients Undergoing a Primary Total Knee Arthroplasty. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Las Vegas, NV.

- 3/24-28/15 Ponnusamy K, **Jain A**, Thakkar S, Skolasky R, Sterling R, Khanuja H. Inpatient Mortality and Morbidity for Transplant Patients Undergoing a Primary Total Knee Arthroplasty. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Las Vegas, NV.
- 3/24-28/15 Ponnusamy K, **Jain A**, Thakkar S, Skolasky R, Sterling R, Khanuja H. Inpatient Mortality and Morbidity for Transplant Patients Undergoing a Primary Total Hip Arthroplasty. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Las Vegas, NV.
- 3/24-28/15 Ponnusamy K, **Jain A**, Thakkar S, Skolasky R, Sterling R, Khanuja H. Inpatient Mortality and Morbidity for Dialysis Patients Undergoing a Primary Total Hip Arthroplasty. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Las Vegas, NV.
- 3/24-28/15 Ponnusamy K, **Jain A**, Thakkar S, Skolasky R, Sterling R, Khanuja H. Inpatient Mortality and Morbidity for Dialysis Patients Undergoing a Primary Total Knee Arthroplasty. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Las Vegas, NV.
- 4/29-5/2/15 **Jain A**, Sponseller P, Modhia U, Shah S, Thompson G, Pawelek J, Akbarnia B, Growing Spine Study Group. Can A “No Final Fusion” Produce Equal Results To Final Fusion After Growing Rod Treatment? Pediatric Orthopaedic Society of North America (POSNA) Annual Meeting in Atlanta, GA.
- 7/8-11/15 Sciubba D, **Jain A**, Neuman B, Kebaish K, Passias P, Zebala L, Kim H, Protopsaltis T, Scheer J, Smith J, Hamilton D, Bess S, Klineberg E, Ames C, and the International Spine Study Group. Development of a Pre-Operative Adult Spinal Deformity Frailty Index that Correlates to Common Quality and Value Metrics: Length of Stay, Major Complications and Patient-Reported Outcomes. International Meeting on Advanced Spine Techniques (IMAST) in Kuala Lumpur, Malaysia.
- 7/8-11/15 Neuman B, Scheer J, Ailon T, Klineberg E, Sciubba D, **Jain A**, Kim H, Zebala L, Passias P, Daniels A, Burton D, Protopsaltis T, Hamilton K, Ames C, and the International Spine Study Group. Development and Validation of a Novel Adult Spinal Deformity Surgical Invasiveness Score: Analysis of 466 Patients. International Meeting on Advanced Spine Techniques (IMAST) in Kuala Lumpur, Malaysia.
- 7/8-11/15 **Jain A**, Naef F, Lenke L, Ames C, Matsuyama Y, Dahl B, Shaffrey C, Qiu Y, Fehlings M, Mehdiian, H, Boachie-Adjei O, Schwab F, Cheung K, Carreon L, Kebaish K. Analysis of ScolioRisk-1 Prospective Multicenter Database Comparing Perioperative Complications and Patient Reported Outcomes in Primary vs. Revision Surgery for Severe Adult Spinal Deformity. International Meeting on Advanced Spine Techniques (IMAST) in Kuala Lumpur, Malaysia.
- 7/8-11/15 **Jain A**, Ames C, Lafage V, Neuman B, Sciubba D, Hart R, Scheer J, Kelly M, Bess S, Hostin R, Shaffrey C, Gupta M, Schwab F, Kebaish K, and the Internal Spine Study Group. Postoperative Coronal Malalignment is Associated with Significantly Poor Patient Reported Outcomes in Operatively Treated Adult Spinal Deformity. International Meeting on Advanced Spine Techniques (IMAST) in Kuala Lumpur, Malaysia
- 7/8-11/15 **Jain A**, Lafage V, Kelly M, Neuman B, Sciubba D, Bess S, Shaffrey C, Ames C, Scheer J, Burton D, Gupta M, Hart R, Hostin R, Kebaish K, and the International Spine Study Group. Validity, Reliability and Responsiveness of SRS-7 as a Functional Outcome Measure for Operatively Treated Adult Spinal Deformity (ASD) Patients. International Meeting on Advanced Spine Techniques (IMAST) in Kuala Lumpur, Malaysia.
- 7/8-11/15 **Jain A**, Kebaish K, Sciubba D, Neuman B, Scheer J, Schwab F, Lafage V, Protopsaltis T, Burton D, Smith J, Shaffrey C, Hostin R, Robinson C, Ames C, and the International Spine Study Group. Early Recovery Kinetics Predict 3-Year Outcomes in Operatively Treated Adult Patients with Spinal Deformity. International Meeting on Advanced Spine Techniques (IMAST) in Kuala Lumpur, Malaysia.
- 7/8-11/15 **Jain A**, Sponseller P, Njoku D, Shah S, Samdani A, Cahill P, Betz R, Newton P, Marks M. Complication Rates after Spinal Surgery for Adolescent Idiopathic Scoliosis Vary Significantly Based on Reporting Methodology: Who to Believe? International Meeting on Advanced Spine Techniques (IMAST) in Kuala Lumpur, Malaysia.
- 7/8-11/15 **Jain A**, Sponseller P, Shah S, Thompson G, Pawelek J, Akbarnia B, and the Growing Spine Study Group. Can a “No Final Fusion” Produce Equal Results to Final Fusion After Growing Rod Treatment? International Meeting on Advanced Spine Techniques (IMAST) in Kuala Lumpur, Malaysia.
- 7/8-11/15 **Jain A**, Hassanzadeh H, Menga E, Sponseller P. Posterolateral Discectomies as Alternative to Anterior Posterior Spinal Fusion in Children with Severe Spinal Deformities. International Meeting on Advanced Spine Techniques (IMAST) in Kuala Lumpur, Malaysia.

- 7/8-11/15 Scheer J, Keefe M, Kelly M, Lafage V, Bess S, Burton D, Hart R, **Jain A**, Protopsaltis T, Hostin R, Shaffrey C, Smith J, Schwab F, Ames C, and the International Spine Study Group. Importance of Patient Reported Individualized Goals When Assessing Outcomes for Adult Spinal Deformity (ASD): Initial experience with a Patient Generated Instrument (PGI). International Meeting on Advanced Spine Techniques (IMAST) in Kuala Lumpur, Malaysia.
- 7/8-11/15 Menga E, Hirschfield C, **Jain A**, Tran D, Caine H, Njoku D, Karol L, Sponseller P. Intraoperative Cardiopulmonary Arrest in Children Undergoing Spinal Deformity Correction: Causes and Associated Factors. International Meeting on Advanced Spine Techniques (IMAST) in Kuala Lumpur, Malaysia.
- 7/8-11/15 Brooks J, **Jain A**, Perez-Gruoso F, Skaggs D, Thompson G, Akbarnia B, Sponseller P. Growing Spine Study Group. Outcomes of Pelvic Fixation in Growing Rod Constructs: An Analysis of Patients with a Minimum of 4 Years Follow-Up. International Meeting on Advanced Spine Techniques (IMAST) in Kuala Lumpur, Malaysia.
- 7/8-11/15 Lafage R, Lafage V, Protopsaltis T, Hart R, Passias P, Klineberg E, Smith J, Neuman B, Hamilton K, **Jain A**, Mundis G, Zebala L, Shaffrey C, Ames C, and the International Spine Study Group. Focal and Dynamic Cervical Alignment Pathology Correlates with Myelopathy Severity in Cervical Deformity Patients. International Meeting on Advanced Spine Techniques (IMAST) in Kuala Lumpur, Malaysia.
- 9/30-10/3/15 Scheer J, Smith J, Schwab F, Hart R, Hostin R, Lafage V, **Jain A**, Burton D, Bess S, Ailon T, Protopsaltis T, Klineberg E, Shaffrey C, Ames C, and the International Spine Study Group. Development of a Validated Computer Based Preoperative Predictive Model for Reaching ODI MCID for Adult Spinal Deformity (ASD) Patients. Scoliosis Research Society (SRS) Annual Meeting in Minneapolis, MN.
- 9/30-10/3/15 **Jain A**, Sponseller P, Cahill P, Yaszay B, Samdani A, Njoku D, Abel M, Pahys J, Betz R, Shah S, Newton P, Marks M. Neuromotor Sub-Classification of GMFCS -5 Predicts Complications and HRQoL in Patients with Cerebral Palsy After Spine Fusion. Scoliosis Research Society (SRS) Annual Meeting in Minneapolis, MN.
- 9/30-10/3/15 Neuman B, **Jain A**, Sciubba D, Klineberg E, Kim H, Zebala L, Mundis G, Lafage V, Passias P, Lafage R, Protopsaltis T, Hamilton D, Scheer J, Ames C, and the International Spine Study Group. Regional Thoracic and Lumbar Sagittal Cobb Angle Changes and UIV Determine Evolution of Cervical Alignment After ASD Surgery: Series of 171 Patients with Two-Year Follow Up. Scoliosis Research Society (SRS) Annual Meeting in Minneapolis, MN.
- 9/30-10/3/15 Scheer J, Smith J, Schwab F, Lafage V, Hart R, Bess S, Line B, Diebo B, Protopsaltis T, **Jain A**, Ailon T, Burton D, Klineberg E, Ames C, and the International Spine Study Group. Development of Validated Computer Based Preoperative Predictive Model for Proximal Junction Failure (PJF) or Clinically Significant PJK with 86 Percent Accuracy Based on 510 ASD Patients with Two-Year Follow Up. Scoliosis Research Society (SRS) Annual Meeting in Minneapolis, MN.
- 9/30-10/3/15 Kelly M, Bess S, Ames C, Burton D, Carreon L, Polly D, Hostin R, **Jain A**, Gum J, Lafage V, Schwab F, Shaffrey C, Smith J, Kim H, and the International Spine Study Group. Minimum Detectable Change (MDC) for Health-Related Quality of Life (HRQL) Measures Varies According Age and Disability in Adult Spinal Deformity (ASD): Implications for Calculating Minimal Clinically Important Difference (MCID). Scoliosis Research Society (SRS) Annual Meeting in Minneapolis, MN.
- 10/14-17/15 ISSG, **Jain A**, Ames C, Neuman B, Sciubba D, Hart R, Hart R, Scheer J, Kelly M, Lafage V, Bess S, Hostin R, Shaffrey C, Gupta M, Schwab F, Kebaish K. Postoperative Coronal Malalignment is Associated with Significantly Poor Patient Reported Outcomes in Operatively Treated Adult Spinal Deformity. North American Spine Society (NASS) Annual Meeting in Chicago, IL.
- 10/14-17/15 ISSG, Scheer J, Smith J, Schwab F, Lafage V, Shaffrey C, Bess S, Hart R, Gupta M, Protopsaltis T, Hostin R, Deviren V, Line B, Daniels A, Diebo B, Lafage R, Zebala L, Mundis G, **Jain A**, Ailon T, Kim HJ, Hamilton DK, Burton D, Klineberg E, Ames C. Development of Validated Computer Based Preoperative Predictive Model for Proximal Junction Failure or Clinically Significant Proximal Junction Kyphosis with 86% Accuracy Based on 510 Adult Spinal Deformity Patients with Two-Year Follow-Up. North American Spine Society (NASS) Annual Meeting in Chicago, IL.
- 10/14-17/15 ISSG, Scheer J, Gum J, Kelly M, Schwab F, Hostin R, Lafage V, Bess S, Protopsaltis T, Kebaish K, Burton D, Gupta M, Soroceanu A, Hart R, Mundis G, **Jain A**, Smith J, Ames C. Ratio of Disability to Deformity Burden in 264 Adult Spinal Deformity Patients with Two-Year Follow-Up: Novel Insight into Drivers of Disability. North American Spine Society (NASS) Annual Meeting in Chicago, IL.

- 3/1-5/16 **Jain A**, Sciubba D, Kebaish K, Neuman B, Bess S, Ames C, ISSG. Development of a Preoperative ASD Frailty Index that Correlates to Common Quality and Value Metrics. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Orlando, FL.
- 3/1-5/16 **Jain A**, Sponseller P, Cahill P, Yaszay B, Samdani A, Betz R, Shah S, Newton P, Marks M. Neuromotor Sub-Classification of GMFCS -5 Predicts Complications and HRQoL in Cerebral Palsy after Spine Fusion. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Orlando, FL.
- 3/1-5/16 Konbaz F, Ramji A, **Jain A**, Neuman B. Postoperative Radiological Changes and Developing Proximal Junctional Kyphosis. American Academy of Orthopaedic Surgeons (AAOS) Annual meeting in Orlando, FL.
- 4/14-15/16 Puvanesarajah V, Yildirim B, An H, **Jain A**, Shen F, Hassanzadeh H. Lumbosacral Epidural Lipomatosis: a Matched Control Study. Lumbar Spine Research Society (LSRS) Annual Meeting in Chicago, IL.
- 4/14-15/16 Puvanesarajah V, **Jain A**, Shimer A, Shen F, Hassanzadeh H. The Effect of Coagulopathies on Perioperative Complications and Clinical Outcomes in Patients Treated with Posterior Lumbar Fusions. Lumbar Spine Research Society (LSRS) Annual Meeting in Chicago, IL.
- 4/27-30/16 **Jain A**, Sponseller P, Shah S, Samdani A, Cahill P, Yaszay B, Narayanan U, Newton P, Marks M. Neuromotor Sub-Classification of GMFCS-5 Predicts Complications and Health Related Quality of Life in Patients with Cerebral Palsy after Spine Fusion. Pediatric Orthopaedic Society of North America (POSNA) Annual Meeting in Indianapolis, IN.
- 4/27-30/16 Miller A, Varghese R, **Jain A**, Sponseller P. Subclassification of GMFCS 4 and 5 Cerebral Palsy by Neuromotor Impairments Predicts Complications and Quality of Life Following Hip Surgery. Pediatric Orthopaedic Society of North America (POSNA) Annual Meeting in Indianapolis, IN.
- 7/1-3/16 Lowdon H, Miller A, **Jain A**, Sponseller Paul, Varghese R. Neuromotor Comorbidities As Risk Factors For Post-Operative Complications In Children With Cerebral Palsy Undergoing Hip Surgery. European Federation of National Associations of Orthopaedics and Traumatology (EFORT) Annual Meeting in Geneva, Switzerland.
- 7/13-16/16 **Jain A**, Kebaish F, Lenke L, Qiu Y, Matsuyama Y, Ames C, Fehlings M, Dahl B, Mehdiian H, Cheung K, Schwab F, Pellisé F, Carreon L, Shaffrey C, Kebaish K. Incidence of Proximal Junctional Kyphosis in Patients with Adult Spinal Deformity Fused to the Pelvis: A ScolRisk-1 Sub-analysis. International Meeting on Advanced Spine Techniques (IMAST) in Washington, D.C.
- 7/13-16/16 **Jain A**, Kebaish F, Lenke L, Ames C, Fehlings M, Mehdiian H, Schwab F, Matsuyama Y, Shaffrey C, Cheung K, Qiu Y, Pellisé F, Carreon L, Dahl B, Kebaish K. Early Postoperative Surgical Site Infections in the ScolRisk 1 Cohort of Complex Spinal Deformity Patients Still Allowed For Improved Health Related Quality of Life Outcomes at 2 Year Follow-Up. International Meeting on Advanced Spine Techniques (IMAST) in Washington, D.C.
- 7/13-16/16 **Jain A**, Hassanzadeh H, Puvanesarajah V, Klineberg E, Kelly M, Hamilton, D, Lafage V, Buckland A, Passias P, Protosaltis T, Lafage R, Smith J, Shaffrey C, Kebaish K, and the International Spine Study Group. Medical Complications in 3,519 Surgically Treated Elderly Patients with Adult Spinal Deformity: Comparison of Multicenter Surgeon Maintained vs. Medicare Claims Database. International Meeting on Advanced Spine Techniques (IMAST) in Washington, D.C.
- 7/13-16/16 Passias P, Poorman G, Jalai C, Neuman B, De la Garza-Ramos R, Miller E, **Jain A**, Sciubba D, Lafage V. Morbidity of Adult Spinal Deformity Surgery in Elderly Has Declined Over Time. International Meeting on Advanced Spine Techniques (IMAST) in Washington, D.C.
- 7/13-16/16 Puvanesarajah V, **Jain A**, Cancienne J, Shimer A, Shen F, Hassanzadeh H. BMP Use and the Risk of Revision Surgery Following Long Posterolateral Fusions in the Elderly. International Meeting on Advanced Spine Techniques (IMAST) in Washington, D.C.
- 7/13-16/16 Puvanesarajah V, Shen F, Cancienne J, **Jain A**, Shimer A, Hassanzadeh H. Risk Factors for Revision Surgery Following Primary Adult Spinal Deformity Surgery in Patients 65 Years and Older. International Meeting on Advanced Spine Techniques (IMAST) in Washington, D.C.
- 7/27-30/16 Gans I, **Jain A**, Sirisreeterux N, Haut ER. Hasenboehler EA. Perioperative Antibiotic Usage for Long Bone Fracture Fixation Varies Considerably. Southern Orthopaedic Association Annual Meeting in Naples, FL.
- 9/21-24/16 **Jain A**, Kebaish F, Lenke L, Shaffrey C, Fehlings M, Dahl B, Mehdiian H, Ames C, Matsuyama Y, Qiu Y, Cheung K, Schwab F, Carreon L, Pellisé F, and Kebaish K. Effect of Age on Postoperative

- Complications and Patient Reported Outcomes in Severe Adult Spinal Deformity: Patients  $\leq 60$  Years vs.  $> 60$  Years. Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.
- 9/21-24/16 **Jain A**, Kebaish K, Skolasky R, Neuman B. Using PROMIS for Health-Related Quality of Life Assessment in Patients with Adult Spinal Deformity. Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.
- 9/21-24/16 **Jain A**, Kebaish F, Lenke L, Carreon L, Ames C, Fehlings M, Dahl B, Matsuyama Y, Qiu Y, Shaffrey C, Mehdian H, Schwab F, Pellisé F, Cheung K, and Kebaish K. Impact of Depression on Health-Related Quality of Life Outcomes in Surgically Treated Adult Spinal Deformity Patients: A ScolioRisk-1 Sub-analysis. Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.
- 9/21-24/16 **Jain A**, Kebaish F, Lenke L, Shaffrey C, Fehlings M, Dahl B, Ames C, Matsuyama Y, Qiu Y, Mehdian H, Cheung K, Schwab F, Pellisé F, Carreon L, and Kebaish K. Complications and Patient Reported Outcomes of Primary vs. Revision Surgery for Severe Adult Spinal Deformity: A ScolioRisk-1 Sub-analysis. Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.
- 9/21-24/16 Miller E, **Jain A**, Daniels A, Neuman B, Soroceanu A, Ailon T, Sciubba D, Bess S, Line B, Lafage V, Scheer J, Kebaish K, Smith J, Ames C, and the International Spine Study Group. Assessment of a Novel Adult Spinal Deformity (ASD) Frailty Index (ASD-FI) to Assist with Risk Stratification for ASD Surgery. Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.
- 9/21-24/16 Gum J, Carreon L, Kelly M, **Jain A**, Hostin R, Smith J, Lafage V, Lafage R, Burton D, Schwab F, Hart R, Klineberg E, Shaffrey C, Bess S, Glassman S, and the International Spine Study Group. What Drives Improvement in Self-Image after ASD Surgery? Scoliosis Research Society (SRS) Annual Meeting in Prague, Czech Republic.
- 10/5-7/16 Pellisé F, **Jain A**, Naef F, Lenke L, Qiu Y, Matsuyama Y, Ames C, Fehlings M, Dahl B, Cheung K, Mehdian H, Schwab F, Carreon L, Shaffrey C, Kebaish K. Incidence of proximal junctional kyphosis in patients with adult spinal deformity fused to the pelvis – a Scolio-RISK-1 sub-analysis. Eurospine Annual Meeting in Berlin, German.
- 10/5-7/16 Pellisé F, **Jain A**, Naef F, Lenke L, Qiu Y, Matsuyama Y, Ames C, Fehlings M, Dahl B, Cheung K, Mehdian H, Schwab F, Carreon L, Shaffrey C, Kebaish K. A comparison of postoperative complications and patient reported outcomes in severe adult spinal deformity patients aged  $\leq 60$  years and  $> 60$  years – a Scolio-RISK-1 sub-analysis. Eurospine Annual Meeting in Berlin, German.
- 10/26-29/16 **Jain A**, Kebaish F, Lenke L, Shaffrey C, Fehlings M, Dahl B, Ames C, Matsuyama Y, Qiu Y, Mehdian H, Cheung K, Schwab F, Pellisé F, Carreon L, and Kebaish K. Impact of Depression on Health-Related Quality of Life Outcomes in Surgically Treated Adult Spinal Deformity Patients: A ScolioRisk-1 Sub-Analysis. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 Protopsaltis T, Ramchandran S, Hamilton D, Sciubba D, Soroceanu A, **Jain A**, Passias P, Lafage V, Lafage R, Smith J, Hart R, Gupta M, Burton D, Bess S, Shaffrey C, Ames C. Analysis of Successful versus Failed Radiographic Outcomes Following Cervical Deformity Surgery North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 Yildirim B, Puvanesarajah V, An H, **Jain A**, Shen F, Hassanzadeh H. Lumbosacral Epidural Lipomatosis: A Matched Control Study. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 **Jain A**, Kelly M, Padula W, Lenke L, Errico T, Kebaish K, Sponseller P. Cost Utility Analysis of Operative vs. Non-operative Treatment for Adolescent Idiopathic Scoliosis. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 Buckland A, Puvanesarajah V, **Jain A**, Klineberg E, Vigdorichik J, Schwarzkopf R, Shaffrey C, Smith J, Hart R, Ames C, Hassanzadeh H. Dislocation of Primary Total Hip Arthroplasty is More Common in Patients with Lumbar Spinal Fusion. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 **Jain A**, Kebaish F, Lenke L, Shaffrey C, Fehlings M, Dahl B, Ames C, Matsuyama Y, Qiu Y, Mehdian H, Cheung K, Schwab F, Pellisé F, Carreon L, and Kebaish K. Effect of Age on Postoperative Complications and Patient Reported Outcomes in Severe Adult Spinal Deformity: Patients  $\leq 60$  Years versus  $> 60$  Years. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 Klineberg E, **Jain A**, Puvanesarajah V, Shaffrey C, Smith J, Bess S, Burton D, Lafage V, Kim H, Sciubba D, Ames C, Scheer J, Gupta M, Hassanzadeh H. Medical Complication Profile for Elective Orthopaedic Surgery in the Elderly, Establishment of a Baseline Complication Rate for THA, TKA, and Spine Fusion. North American Spine Society (NASS) Annual Meeting in Boston, MA.

- 10/26-29/16 Puvanesarajah V, **Jain A**, Shimer A, Li X, Singla A, Shen F, Hassanzadeh H. Complications and Mortality Following One- to Two-Level Lumbar Fusion Surgery in Patients Above 80 Years of Age. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 **Jain A**, Kebaish F, Lenke L, Shaffrey C, Fehlings M, Dahl B, Ames C, Matsuyama Y, Qiu Y, Mehdian H, Cheung K, Schwab F, Pellisé F, Carreon L, and Kebaish K. Incidence of Proximal Junctional Kyphosis in Patients with Adult Spinal Deformity Fused to the Pelvis: Analysis of 198 Patients. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 **Jain A**, Kebaish F, Lenke L, Shaffrey C, Fehlings M, Dahl B, Ames C, Matsuyama Y, Qiu Y, Mehdian H, Cheung K, Schwab F, Pellisé F, Carreon L, and Kebaish K. Complications and Patient-Reported Outcomes of Primary versus Revision Surgery for Severe Adult Spinal Deformity: A ScolioRisk-1 Sub-Analysis. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 10/26-29/16 **Jain A**, Kebaish K, Skolasky R, Neuman B. Using PROMIS for Health-Related Quality of Life Assessment in Patients with Adult Spinal Deformity. North American Spine Society (NASS) Annual Meeting in Boston, MA.
- 3/14-18/17 **Jain A**, Hassanzadeh H, Puvanesarajah V, Sciubba D, Buckland A, Klineberg E, Kelly M, Passias P, Lafage V, Lafage R, Shaffrey C, Smith J, Kebaish K. Perioperative Medical Complications and Mortality Rate Among 3,519 Elderly Patients Undergoing Surgery for Spinal Deformity. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting in San Diego, CA.
- 3/14-18/17 **Jain A**, Lenke L, Kebaish F, Ames C, Fehlings M, Carreon L, Schwab F, Shaffrey C, Kebaish K. Early Postoperative Surgical Site Infections in the Scolio-Risk 1 Cohort of Complex Spinal Deformity Patients Still Allowed for Improved Health Related Quality of Life Outcomes at 2 Year Follow-Up. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting in San Diego, CA.
- 3/14-18/17 **Jain A**, Kelly M, Lenke L, Errico T, Kebaish K, Sponseller P. Cost Utility Analysis of Operative vs. Non-operative Treatment for Adolescent Idiopathic Scoliosis. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting in San Diego, CA.
- 5/3-6/17 Marks M, **Jain A**, Kelly M, Lenke L, Errico T, Kebaish K, Sponseller P. Cost Utility Analysis of Operative vs. Non-operative Treatment for Adolescent Idiopathic Scoliosis. Pediatric Orthopaedic Society of North America (POSNA) Annual Meeting in Barcelona, Spain.
- 7/12-15/17 Sullivan B, Abousamra O, Puvanesarajah V, **Jain A**, Hadad M, Sponseller P. Deep Infections Differ Following Spinal Fusion for Idiopathic, Syndromic and Neuromuscular Deformity. International Meeting on Advanced Spine Techniques (IMAST) in Cape Town, South Africa.
- 9/6-9/17 **Jain A**, Sullivan B, Hassanzadeh H, Sponseller P. Posterolateral Discectomies for Pediatric Spinal Deformities: Indications, Outcomes, and Comparison with Anteroposterior Spinal Arthrodesis. Scoliosis Research Society (SRS) Annual Meeting in Philadelphia, PA.
- 9/6-9/17 **Jain A**, Sponseller P, Sullivan B, Shah S, Samdani A, Yaszay B, Narayanan U, Newton P, Marks M, Harms Study Group. Relative Valuation of Interventions for Severe Cerebral Palsy: Spinal Correction Ranked the Most Beneficial, but Below G-tube. Scoliosis Research Society (SRS) Annual Meeting in Philadelphia, PA.
- 9/6-9/17 Goh B, Uzosike A, Tamai R, El Dafrawy M, **Jain A**, Sciubba D, Skolasky R, Kebaish K, Neuman B. Utilizing the Fracture Risk Assessment Tool (FRAX) to Assess Risk of Proximal Junctional Kyphosis in Adult Spinal Deformity Surgery. Scoliosis Research Society (SRS) Annual Meeting in Philadelphia, PA.
- 9/6-9/17 **Jain A**, Yermaneni S, Gum J, Kelly M, MD; Kebaish K, Burton D, Ames C, Shaffrey C, Smith J, Hassanzadeh H, Glassman S, Carreon L, Bess S, Hostin R, International Spine Study Group. Cost Effectiveness of rhBMP-2 Use in Adult Spinal Surgery. Scoliosis Research Society (SRS) Annual Meeting in Philadelphia, PA.
- 3/6-10/18 Qureshi R, Werner B, Puvanesarajah V, Menga E, **Jain A**, Shen F, Hassanzadeh H. Risk Factors for Narcotic Use beyond Three Months after Lumbar Spinal Deformity Surgery. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting in New Orleans, LA.
- 3/6-10/18 Gum J, **Jain A**, Carreon L, Hostin R, Yermaneni S, Glassman S, Kelly M, Burton D, Polly D, Smith J, Shaffrey C, Schwab F, Sethi R, Neuman B, Ames C, Bess S, ISSG. Planned Staging of Complex Adult Spinal Deformity Surgery Does Not Result in Increased Length of Stay or Increased Cost. American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting in New Orleans, LA.



- 4/5-6/18 **Jain A**, Hobson S, Yoon E, Boden S, Heller J, Rhee J, Yoon T. Obesity is Associated with Increased OR Time, Hospital Stay, and Postoperative Wound Complications in Lumbar Fusion Surgery. Lumbar Spine Research Society (LSRS) Annual Meeting in Chicago, IL.
- 7/11-14/18 **Jain A**, Hobson S, Yoon E, Boden S, Heller J, Rhee J, Yoon S. Obesity is Associated with Increased OR Time, Hospital Stay, and Postoperative Wound Complications in Lumbar Fusion Surgery: Analysis of 1,196 Cases at a Single Institution. International Meeting on Advanced Spine Techniques (IMAST) in Los Angeles, CA.
- 9/18-21/19 Marrache M, Sponseller P, Lonner B, Buckland A, Kelly M, Shah S, Samdani A, Newton P, **Jain A**. Residual Curve and Truncal Shift Impact Patient Satisfaction after Surgery for AIS. Scoliosis Research Society (SRS) Annual Meeting in Montreal, Canada.
- 9/18-21/19 Lonner B, **Jain A**, Sponseller P, Samdani A, Kelly M, Castillo A, Marrache M, Ames C, Shah S. What Are Parents Willing to Accept? A Prospective Study of Risk Tolerance for AIS Surgery. Scoliosis Research Society (SRS) Annual Meeting in Montreal, Canada.
- 9/18-21/19 Marrache M, Sponseller P, Lonner B, Buckland A, Kelly M, Shah S, Samdani A, Marks M, Newton P, **Jain A**. Impact of Poor Mental Health on Clinical Outcomes in Surgically Treated Adolescents Idiopathic Scoliosis Patients. Scoliosis Research Society (SRS) Annual Meeting in Montreal, Canada.
- 9/18-21/19 Lonner B, Castillo A, **Jain A**, Sponseller P, Samdani A, Kelly M, Ames C, Marrache M, Shah S. The Ultimate Patient Reported Outcome Tool: Patient Generated Index in Adolescent Idiopathic Scoliosis. Scoliosis Research Society (SRS) Annual Meeting in Montreal, Canada.
- 9/18-21/19 Klyce W, **Jain A**, Parent S, Shah S, Cahill P, George S, Clements D, Upsani V, Yaszay B, Miyajni F, Kelly M, Lonner B, Marks M, Newton P, Sponseller P, Harms Study Group. Pedicle Screw Plowing in Adolescent Idiopathic Scoliosis: How Common Is It, and Is It a Problem? Scoliosis Research Society (SRS) Annual Meeting in Montreal, Canada.
- 11/21-23/19 Marrache M, Harris A, Puvanesarajah V, Raad M, **Jain A**. Perioperative Spending In Single-Level Anterior Cervical Discectomy And Fusion For Degenerative Pathology. Cervical Spine Research Society (CSRS) Annual Meeting in New York, NY.
- 9/9-13/20 Prasad N, Marrache M, Njoku D, Sponseller P, **Jain A**. Variability in Anesthetic Practices in Surgical Treatment of Adolescent Idiopathic Scoliosis. Scoliosis Research Society (SRS) Annual Meeting 2020. Virtual.
- 9/9-13/20 Bansal D, Marrache M, Sponseller P, Shah S, Samdani A, Cahill P, Lonner B, Marks M, Newton P, Errico T, **Jain A**. Bone Graft Substitutes and Extenders are Associated with a Higher Rate of Wound Complications. Scoliosis Research Society (SRS) Annual Meeting 2020. Virtual.
- 9/9-13/20 **Jain A**, McNeely E, Neuman B, Gum J, Bess S, Hostin R, Lafage V, Yeramaneni S, Klineberg E, Lafage R, Gupta M, Smith J, Burton D, Passias P, Protosaltis T, Kebaish K. Residual Coronal Malalignment Results in Less Improvement in Pain and Disability after ASD Surgery. Scoliosis Research Society (SRS) Annual Meeting 2020. Virtual.
- 9/24/21 Suresh K, Sponseller P, Shah S, Miyajni F, Samdani A, Yaszay B, Newton P, **Jain A**, Harms Study Group. Spinal Fusion Leads to Quality Adjusted Life Year Gains in Cerebral Palsy Patients Sustained up to 5 Years after Surgery. Scoliosis Research Society (SRS) Annual Meeting 2021 in St. Louis, MO.
- 9/24/21 Ikwuezunma I, Wang K, Sponseller P, **Jain A**. Cost-Utility Analysis of Bracing vs. Observation for Adolescent Idiopathic Scoliosis. Scoliosis Research Society (SRS) Annual Meeting 2021 in St. Louis, MO.
- 9/16/22 Gum J, Yeramaneni S, Wang K, Hostin R, Kebaish K, Neuman B, **Jain A**, Kelly M, Burton D, Ames C, Shaffrey C, Klineberg E, Kim H, Protosaltis T, Passias P, Mundis G, Eastlack R, Schwab F, Hart R, Gupta M, Daniels A, Smith J, Lafage V, Line B, Bess S, International Spine Study Group. Comparison of Patient Factors (Frailty) vs. Surgical Factors (Invasiveness) for Optimization of 2-Year Cost-Utility: We Should Focus on the Patient Factors. Scoliosis Research Society (SRS) Annual Meeting 2022 in Stockholm, Sweden.
- 9/16/22 Gajewski N, Ali A, Sponseller P, **Jain A**, Cahill P, Samdani A, Yaszay B, Shah S, Harms Study Group. Proximal Junctional Kyphosis After Spinal Deformity Correction in Cerebral Palsy: Incidence and Predictive Analytics. Scoliosis Research Society (SRS) Annual Meeting 2022 in Stockholm, Sweden.
- 9/6/23 Durand W, Cartagena-Reyes M, Sponseller P, **Jain A**. Epidemiology of Surgical Management for Pediatric Spondylolysis and Spondylolisthesis. Scoliosis Research Society (SRS) Annual Meeting 2023 in Seattle, WA.

- 9/7/23 Brooks J, Bauer J, **Jain A**, Miyanji F, Parent S, Newton P, Upasani V, Cahill P, Sucato D, Sponseller P, Samdani A, Harms Study Group. Should the C7-T1 Junction Be Feared? The Effect of a T1 UIV on PJK Risk in AIS Patients at LongTerm Follow-Up. Scoliosis Research Society (SRS) Annual Meeting 2023 in Seattle, WA.
- 9/9/23 Durand W, Theologis A, Cartagena-Reyes M, Hassanzadeh H, Kebaish K, Sponseller P, **Jain A**. Patient Financial Burden in Surgical Treatment of Adolescent and Adult Spinal Deformity. Scoliosis Research Society (SRS) Annual Meeting 2023 in Seattle, WA.
- 9/9/23 Benes G, Elnemer W, **Jain A**, Njoku D, Sponseller P. Defect in Extrinsic Pathway Impacts Clotting Efficiency in Neuromuscular Scoliosis. Scoliosis Research Society (SRS) Annual Meeting 2023 in Seattle, WA.
- 4/12/24 Joshi A, Baber J, **Jain A**, Kebaish K, Hassanzadeh H. Vancomycin Efficacy in Reducing Surgical Site Infection in Posterior Spinal Fusion. International Meeting on Advanced Spine Techniques (IMAST) Annual Meeting 2024 in San Diego, CA.

### **Humanitarian Activities**

- 02/14 Medical Mission to Ludhiana, India. Organization: Operation Walk  
Volunteer orthopaedic surgeon in a team that performed 65 charity total hip and knee arthroplasties over a one-week period in Ludhiana, India.
- 04/16 Medical Mission to Antigua, Guatemala. Organization: Faith in Practice  
Volunteer orthopaedic surgeon in a multidisciplinary team that performed 50 charity total joint arthroplasties and sports medicine surgeries over a one-week period in Antigua, Guatemala.