



Publication summary of the **AO Spine Knowledge Forum Deformity – Spinal Deformity Intraoperative Monitoring (SDIM)**

March 2026

Conference Proceedings:

Podium/Oral Presentations

1. Ahmed Shawky Abdelgawaad SJL, Juan Sardi, Christopher Nielsen, Sigurd Berven, Zeeshan Sardar, Munish Gupta, Lawrence G. Lenke, Yong Qiu, Ferran Pellisé, Ahmet Alanay, Justin S. Smith, Nasir A. Quraishi, Randolph J Gray, Saumyajit Basu, Go Yoshida, Amer Aziz, SDIM Study Group, AO Spine Knowledge Forum Deformity. *Neuromonitoring-Alarmen bei Drei-Säulen-Osteotomien (3CO) zur Korrektur von Wirbelsäulendeformitäten sind mit einer hohen Rate an neurologischen Defiziten assoziiert.* 20th Annual Meeting of the German Spine Society (DWG) Wiesbaden, Germany. December 10 - 12, 2025.
2. Anna Rienmueller LGL, Yong Qiu, Ferran Pellisé, Ahmet Alanay, Justin S. Smith, Nasir A. Quraishi, Randolph J Gray, Saumyajit Basu, Go Yoshida, Amer Aziz, Stephen J. Lewis, SDIM Study Group, AO Spine Knowledge Forum Deformity. *Does Patient Gender Affect The Probability of Intraoperative Neuromonitoring (IONM) Alerts, and Neurological Outcomes in Severe Spinal Deformity Surgery?* 20th Annual Meeting of the German Spine Society (DWG) Wiesbaden, Germany. December 10 - 12, 2025.
3. B. Saumyajit , C. Oitmen, C. Yilgor , L. Lenke, Q. Yong, F. Pellisé, A. Alanay, J.S.M. Smith , N. Quraishi , R. Gray, G. Yoshida, A. Aziz and S. Lewis. *Unilateral intraoperative neuromonitoring (IONM) MEP alerts in cord level surgeries for severe spinal deformities – etiology and recovery patterns.* Eurospine Copenhagen, Denmark. October 22-24, 2025.
4. Neuman B, Kelly MP, Sardar Z, Yilgor C, Swamy G, Smith JSM, Lenke L, Gupta M, Saumyajit B, Klineberg EO, Ravinsky R, Nielsen C and Lewis S. *Understanding bilateral mep changes during cord level spinal deformity surgery: Etiology, significance and response.* Eurospine Copenhagen, Denmark. October 22-24, 2025.
5. Sardi J, Rocos B, Lenke LG, Qiu Y, Pellisé F, Alanay A, Smith JS, Quraishi NA, Gray RJ, Basu S, Yoshida G, Aziz A, Lewis SJ, Group SS and AO Spine Knowledge Forum Deformity. *Incidence and Risk Factors of Postoperative Motor Deficits After Spine Deformity Surgery: Results of the SDIM Study.* Scoliosis Research Society (SRS) 60th Annual Meeting & Course 2024 Charlotte, NC, USA. September 16-20, 2025.
6. Kato S, Jones K, Berven S, Nielsen C, Kelly MP, Smith JS, Lenke LG, Strantzas S, Qiu Y, Pellisé F, Alanay A, Basu S, Quraishi NA, Gray RJ, Yoshida G, Aziz A, Lewis SJ, SDIM Study Group and AO Spine Knowledge Forum Deformity. *Role of somatosensory evoked potentials in enhancing intraoperative neuromonitoring for spinal deformity surgery – results from prospective multicenter study.* 14th Combined Meeting of the APSS (Spine) and APPOS (Paediatric Orthopaedic) Kuala Lumpur, Malaysia. June 20-22, 2025.

7. Anna C. Rienmüller KYHK, Yong Qiu, Ferran Pellise, Ahmet Alanay, Justin Smith, Nasir Quraishi, Randolph Gray, Saumyajit Basu, Go Yoshida, Amer Aziz, Lawrence Lenke, Stephen Lewis. *Risk factors for IONM alerts*. Global Spine Congress 2025 Rio de Janeiro, Brazil. May 28-31, 2025.
8. Colby Oitment SB, Stephen Lewis. *Unilateral intra-operative neuromonitoring (IONM) MEP alerts in cord level surgeries for severe spinal deformity-etiology and recovery patterns*. Global Spine Congress 2025 Rio de Janeiro, Brazil. May 28-31, 2025.
9. Jentsch T, Rienmüller A, Oitment C, Qiu Y, Pellise F, Alanay A, Smith J, Quraishi N, Gray R, Basu S, Yoshida G, Aziz A, Lenke L, Lewis S and AO Deformity Knowledge Forum. *Intraoperative neuromonitoring alerts, responses, and postoperative neurological outcomes in lumbar high-grade lumbar spondylolisthesis fusion surgery: AO Spine international multicenter spinal deformity intraoperative monitoring (SDIM) study*. Global Spine Congress 2025 Rio de Janeiro, Brazil. May 28-31, 2025.
10. Kato S, Lenke L, Jones K, Berven S, Nielsen CJ, Basu S, Kelly M, Smith J, Strantzas S, Qiu Y, Pellise F, Alanay A, Quraishi N, Gray R, Yoshida G, Aziz A and Lewis S. *Role of somatosensory evoked potential (SSEP) in enhancing intraoperative neuromonitoring for spinal deformity surgery - Results from a prospective multicenter study*. Global Spine Congress 2025 Rio de Janeiro, Brazil. May 28-31, 2025.
11. Lewis S, Zohar A and Lenke L. *Creating a prospective multicenter international study on intra-operative neuromonitoring in spinal deformity surgery*. Global Spine Congress 2025 Rio de Janeiro, Brazil. May 28-31, 2025.
12. Neuman B, Kelly M, Sardar Z, Swamy G, Smith J, Lenke L, Gupta M, Basu S, Klinerberg E, Ravinsky R, Nielsen CJ and Lewis S. *Understanding blateral MEP changes during cord level spinal deformity surgery: etiology, significance and response*. Global Spine Congress 2025 Rio de Janeiro, Brazil. May 28-31, 2025.
13. Basu Saumyajit CO, Caglar Yilgor, Lawrence Lenke, Young Qui, Ferran Pellisé, Ahmet Alanay, Justin S. Smith, Nasir Quraishi, Randolph J. Gray, Go Yoshida, Amer Aziz, Stephen Lewis. *Unilateral Intraoperative Neuromonitoring (IONM) MEP Alerts in CordLevel Surgeries For Severe Spinal Deformities – Etiology and RecoveryPatterns*. 16th International Turkish Spine Congress La Blanche Island, Bodrum, Tukiye. May 22-25, 2025.
14. Neuman B, Kelly MP, Sardar ZM, Yilgor C, Swamy G, Smith JS, Lenke LG, Gupta M, Basu S, Klineberg EO, Ravinsky R, Nielsen C and Lewis S. *Understanding Bilateral MEP Changes during Cord Level SpinalDeformity Surgery: Etiology, Significance and Response*. 16th International Turkish Spine Congress La Blanche Island, Bodrum, Tukiye. May 22-25, 2025.
15. Colby Oitment SB, Lawrence G. Lenke, Yong Qiu, Ferran Pellisé, Ahmet Alanay, Justin S. Smith, Nasir A. Quraishi, Randolph J Gray, Go Yoshida, Amer Aziz, Stephen J. Lewis, SDIM Study Group, AO Spine Knowledge Forum Deformity. *Unilateral Intraoperative Neuromonitoring (IONM) Alerts in Cord Level Surgeries for Severe Spinal Deformities – etiology and recovery patterns - Results from International SDIM Study*. 32nd International Meeting on Advanced Spine Techniques (IMAST) Glasgow, Scotland. April 2-5, 2025.
16. Lewis S. *Intraoperative Neuromonitoring has poor correlation with postop neurological deficits in non-cord level adult deformity surgery* 25th Annual Scientific Conference of the Canadian Spine Society La Malbaie QC Canada. February 25 - 28, 2025.
17. Lewis S. *Role of somatosensory evoked potentials in enhancing intraoperative neuromonitoring for spinal deformity surgery – results from prospective multicenter study* 25th Annual Scientific Conference of the Canadian Spine Society La Malbaie QC Canada. February 25 - 28, 2025.
18. Shawky A. *Intraoperative neuromonitoring has poor correlation with postop neurological deficits in non-cord level adult deformity surgery*. 14th Pan Arab Spine Society Conference Dubai, UAE. January 24 - 26, 2025.

19. Shawky A. *Understanding bilateral MEP changes during cord-level spinal deformity surgery: Etiology, significance, and response* 14th Pan Arab Spine Society Conference Dubai, UAE. January 24 - 26, 2025.
20. Polly D. *The Dreaded False Negatives - When Intraoperative Neuromonitoring (IONM) Fails to Detect Neural Deficits Associated with Complex, NonCord-Level Spinal Deformity Corrections* 66th SOMOS meeting Nashville, TN, USA. December 9-13, 2024.
21. Polly D. *Saving Spinal Cord Function by Using Intra-Operative Monitoring and Rapid Response During Spinal Deformity Surgery*. 66th SOMOS meeting Nashville, TN, USA. December 9-13, 2024.
22. Basu SS, Lewis SJ, Polly DW, Kato S, Klineberg EO, Jones KE, Rocos B, Strantzas S, Ganau M, Lebel DE and Christopher J. Nielsen. *Intraoperative Neuromonitoring (IONM) Alerts in Cord Level Surgeries for Severe Spinal Deformities – Do Appropriate Corrective Measures Prevent Neurodeficit - Results of Spinal Deformity Intraoperative Monitoring (SDIM)*. Scoliosis Research Society (SRS) 59th Annual Meeting & Course 2024 Barcelona, Spain. September 10-14, 2024.
23. Gupta MC, Theologis AA, Swamy G, Yoshida G, Kelly MP, Jentzsch T, Strantzas S, Basu S, Kwan KY, Smith JS, Pellisé F, Kato S, Sardar ZM, Ames CP, Jones KE, Charalampidis A, Rocos B, Lenke LG and Lewis SJ. *Rapid Response During Spinal Deformity Surgery Can Successfully Save Spinal Cord Function Using Intraoperative Monitoring* Scoliosis Research Society (SRS) 59th Annual Meeting & Course 2024 Barcelona, Spain. September 10-14, 2024.
24. Kwan KY, Qiu Y, Alanay A, Andujar ALF, Elias E, Lewis SJ and Strantzas S. *What Events Are Associated with Intraoperative Neuromonitoring Alerts in Spinal Deformity Surgeries? Results from the Prospective, Multicentre Spinal Deformity Intraoperative Monitoring (SDIM)* Scoliosis Research Society (SRS) 59th Annual Meeting & Course 2024 Barcelona, Spain. September 10-14, 2024.
25. Sardar ZM, Theologis AA, Swamy G, Yoshida G, Kelly MP, Jentzsch T, Strantzas S, Basu S, Kwan KY, Smith JS, Pellisé F, Kato S, Gupta MC, Ames CP, Jones KE, Charalampidis A, Rocos B, Lenke LG and Stephen J. Lewis. *Intraoperative Neuromonitoring Has Poor Correlation with Postop Neurological Deficits in Non-Cord Level Adult Deformity Surgery* Scoliosis Research Society (SRS) 59th Annual Meeting & Course 2024 Barcelona, Spain. September 10-14, 2024.
26. Lewis S, Kelly M, Charalampidis A, Swamy G and Lenke L. *Is a 50% loss in IONM signal the appropriate cut-off in spinal deformity surgery?* North American Spine Society (NASS) 39th Annual Meeting Chicago, IL, USA. September 25-28, 2024.
27. Sardar Z, Theologis AA, Swamy G, Yoshida G, Kelly M, Sembrano J, Jentzsch T, Strantzas S, Basu S, Kwan K, Smith J, Pelisse F, Kato S, Gupta MC, Ames CP, Jones K, Charalampidis A, Rocos B, Lenke L, Lewis S and AO Spine Knowledge Forum Deformity. *Intraoperative Neuromonitoring has a Poor Correlation with Postoperative Neurological Deficits in Non-cord Level Adult Deformity Surgery*. North American Spine Society (NASS) 39th Annual Meeting Chicago, IL, USA. September 25-28, 2024.
28. Theologis A, Smith J, Pelisse F, Sardar Z, Kato S, Gupta M, Kwan K, Basu S, Shaffrey C, Lenke L, Lewis S and AO Spine Knowledge Forum Deformity. *The Dreaded False Negatives - When Intraoperative Neuromonitoring (IONM) Fails to Detect Neural Deficits Associated with Complex, Non-Cord-Level Spinal Deformity Corrections* North American Spine Society (NASS) 39th Annual Meeting Chicago, IL, USA. September 25-28, 2024. **[Best papers award]**
29. Pellisé F. *The Dreaded False Negatives - When Intraoperative Neuromonitoring Fails to Detect Neural Deficits Associated with Complex Spinal Deformity Correction: A Prospective International Study from the AO Spine Knowledge Forum Deformity*. 38th National Congress of the Spanish Spine Society (GEER) Malaga, Spain. May 29-31, 2024. **[Best Paper Award GEER]**
30. Basu S. *Recovery patterns and de-novo neurological deficits associated with intraoperative neuromonitoring (IONM) alerts in cord level severe spinal deformity surgeries - results from an*

- international multi center prospective Spinal Deformity Intraoperative Monitoring (SDIM) study.* Global Spine Congress 2024 Bangkok, Thailand. May 15-18, 2024.
31. Gupta M, Sardar Z, Lenke L, Basu S, Kwan KYH, Lewis S, Hoff Mv, Kato S, Theologis A, Charalampidis A, Ames C, Jones K and Pellise F. *Saving Spinal Cord Function By Using Intraoperative Monitoring And Rapid Response During Spinal Deformity Surgery* Global Spine Congress 2024 Bangkok, Thailand. May 15-18, 2024.
 32. Kwan K. *What events are associated with intraoperative neuromonitoring alerts in spinal deformity surgeries? Results from the multi-centre prospective Spinal Deformity Intraoperative Monitoring (SDIM) study.* Global Spine Congress 2024 Bangkok, Thailand. May 15-18, 2024.
 33. Sardar Z. *MEP, SSEP, or EMG. How reliable are intraoperative neuromonitoring alerts during non-cord level spinal deformity surgery? Results from the Spinal Deformity Intraoperative Monitoring (SDIM) study.* Global Spine Congress 2024 Bangkok, Thailand. May 15-18, 2024.
 34. Theologis A. *The Dreaded False Negatives - When Intraoperative Neuromonitoring Fails to Detect Neural Deficits Associated with Complex Spinal Deformity Correction: A Prospective International Study from the AO Spine Knowledge Forum Deformity.* Global Spine Congress 2024 Bangkok, Thailand. May 15-18, 2024.
 35. Lewis SJ, Akula MR, Nielsen CJ, Strantzas S, Holmes L, Lenke LG and AO Spine Knowledge Forum Deformity. *Responding to Intra-Operative Neuromonitoring Alerts in Spinal Deformity Surgery: A Pilot Data Form can Summarize Key Intra-operative Data.* Global Spine Congress 2018 Singapore, Singapore. May 2-5, 2018.

Poster or Virtual Presentations

1. Lewis S. *In a 50% loss in IONM signal the appropriate threshold in spinal deformity surgery?* 25th Annual Scientific Conference of the Canadian Spine Society La Malbaie QC Canada. February 25 - 28, 2025.
2. Lewis S. *Surgical Intervention Enhances Social Function in Older Adults with Spinal Deformity: A PEEDS database study.* 25th Annual Scientific Conference of the Canadian Spine Society La Malbaie QC Canada. February 25 - 28, 2025.
3. Lewis S. *Methodology for the SDIM study: Standardizing Intraoperative Neuromonitoring in Complex Spinal Deformity Surgery* 25th Annual Scientific Conference of the Canadian Spine Society La Malbaie QC Canada. February 25 - 28, 2025.
4. Gupta M, Theologis A, Swamy G, Yoshida G, Kelly M, Strantzas S, Basu S, Kwan K, Smith J, Pellise F, Kato S, Sardar Z, Ames C, Jones K, Charalampidis A, Rocos B, Lenke L and Lewis S. *Rapid response during spinal deformity surgery can successfully save spinal cord function using intraoperative monitoring.* North American Spine Society (NASS) 39th Annual Meeting Chicago, IL, USA. September 25-28, 2024.
5. Lewis SJ, Matsuyama Y, Lenke LG, Kelly M, Shaffrey CI, Dahl BT, de Kleuver M, Spruit M, Pellisé-Urquiza F, Cheung K, Alanay A, Polly DW, Sembrano J, Qiu Y and Berven SH. *Responding to intra-operative neuromonitoring (IONM) changes during pediatric coronal spinal deformity surgery.* Scoliosis Research Society (SRS) 54th Annual Meeting & Course 2019 Montreal, QC, Canada. September 18-21, 2019.