

RESEARCH



UNIVERSITY OF
CALGARY
SPINE PROGRAM



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Dear Colleagues,

Welcome to our Fall 2024 Spine Program Research Newsletter. We are pleased to showcase many current research activities once again. Features in this issue include:

- A profile about Emily Bangsboll, who is a current biomedical engineering master's student with Dr. Ganesh Swamy and Dr. Janet Ronsky. Her thesis work is titled: *In vivo* kinematic outcomes of cervical total disc arthroplasty using dual fluoroscopy.
- A warm welcome to our newest Research Coordinator, Naila Jamani. Naila joined us in September, and she is working on CSORN at Caleo Health and PRAXIS at FMC.
- Updates on our Fellow's current research activities.

As usual, we've also includes summaries of recent publications and awards, and we present updates on the status of current projects and enrolment in our prospective studies. Please continue to send in information about any of your efforts, so that we can highlight and share your work.

Enjoy!

Nathan Evaniew

Tara Whittaker

WHAT'S NEW?

CSORN Principal Investigators' Fall Research Conference

This meeting took place in Toronto on October 3, 2024. Calgary was well represented by Dr. Soroceanu, Dr. Thomas, Dr. Jacobs, Dr. Evaniew and Dr. Swamy.

Agenda item included updates on general CSORN activities as well prospective sub studies including Deformity, Isthmic Spondy, and Degenerative Cervical Myelopathy.



Exciting News from the ERAS Society Conference in Malaga

We are happy to share highlights from the recent ERAS Society Conference held in beautiful Malaga, Spain. Our team proudly presented four impactful abstracts, each reflecting our efforts to improve perioperative care of patients undergoing spine surgery:

- *Creating an Audit System with Automated Data Extraction Capabilities to Reduce Overall Data Abstraction Time*
- *Learning Collaborative to Improve Postoperative Mobilization Documentation After Lumbar Spine Fusion*
- *Implementation of the ERAS Society Lumbar Fusion Perioperative Consensus Statement in Calgary, Alberta: Early Results of 100 Patients*
- *Early Urinary Catheterization Removal After Lumbar Fusion Surgery: A Quality Improvement Initiative*

We are particularly pleased to announce that **Erin Barrett** received the “**E-poster of Distinction Presentation Award**” for her outstanding work on “Early Urinary Catheterization Removal After Lumbar Fusion Surgery: A Quality Improvement Initiative.”

Congratulations to the entire team for their hard work and dedication! These contributions reflect our ongoing commitment to enhancing patient care and outcomes. Stay tuned for more updates as we continue advancing the ERAS program initiatives for spine surgery!

Project Tracker

Prospective RCTs in follow-up			
Immunotherapy for Acute SCI (Abbvie)	Jacobs	In follow-up	5
CAPREG: i-FACTOR + Matrix Bone Graft Device in Spinal Fusion	Jacobs	in follow-up	60
Clinical Studies - Observational			
Degenerative Cervical Myelopathy (DCM)	Cadotte/Jacobs/Evaniew	enrolling/data collection	620
Ant vs post surgery for lumbar isthmic spondy: multicenter prospective cohort study	Thomas/Evaniew	enrolling/data collection	10
Indirect Decompression in the Surgical Treatment of Degenerative Spondylolisthesis	Thomas	enrolling/data collection	2
Degenerative Spondy Cohort Study (CSORN)	Fisher/Thomas	in follow-up	41
Surgical Treatment of Adult Spinal Deformity (CSORN Deformity Module)	Soroceanu/Swamy	enrolling/data collection	252
Surgical Treatment of Adult Spinal Deformity (CSORN non-module)	Soroceanu/Swamy	enrolling/data collection	73
qMRI & cervical myelopathy (CSORN)	Cadotte	enrolling/data collection	189
Natural History of Mild DCM (CSORN)	Cadotte	enrolling/data collection	39
Mechanical difference in IVD of degenerative scoli and spondy (CSORN)	Swamy	enrolling/data collection	211
Analysis of the Implications of Lumbopelvic Alignment on the Alignment of the Cervical Spine	Nicholls	analysis	500/500
Normative EOS analysis of lower extremity alignment - acetabulum	Nicholls	under review	
University of Calgary Longitudinal Study of Normative Alignment	Nicholls	analysis	
Can Systemic inflammatory profiles predict Natural history of lumbar disc herniations	Swamy/Salo	enrolling/data collection	198
Quantifying In Vivo Cervical Spine Motion and Influence of Cervical Total Disc Arthroplasty	Swamy/Salo/Bouchard	enrolling/data collection	2
Effects of obesity on outcomes after degenerative lumbar spine surgery (CSORN)	Evaniew	analysis	
Outcomes of anterior lumbar disc replacement	Bouchard	enrolling/data collection	
Imaging Biomarkers in spinal cord injury-Imaging library of acute traumatic SCI	Cadotte	enrolling/data collection	75
Association between poor postoperative pain control and length of hospital stay	Yang/Casha	under review	
Intradiscal hydrogel failure leading to neurological injury- a case report	Yang	manuscript prep	
Patient expectations of thoracolumbar deformity surgery	Soroceanu/Thomas/Singh	manuscript prep	

Clinical Studies – Observational...

MCID for NDI	Evaniew	under review	
How pts who have had their preoperative expectations met vs those that have not differ from one another	Thomas/Singh	enrolling/data collection	
Development of a patient Decision Aide in Adult Spinal Deformity	Swamy/Cates	enrolling/data collection	
CSORN Deformity Modified Delphi Research Question Planning Procedure	Smith/Swamy	manuscript prep	
Impact of an outpatient group pain education and psychotherapy program in spine surgery patients	Eckenswiler/Swamy	enrolling/data collection	
Interventions to Modify Maladaptive Psychological Traits in Patients Undergoing Spine Surgery: A Systematic Review	Skarsgard/Evaniew	under review	
Mobilization - Lumbar Fusion surgery patients	Yang/Lewkonja	enrolling/data collection	69

Prospective Data Collection

PRAXIS-Rick Hansen SCI database	Casha/Cadotte	enrolling/data collection	826
PRAXIS- Non-Traumatic patients	Casha/Cadotte	enrolling/data collection	166
ISSG - Deformity (UCAPONY pts)	Soroceanu	in follow-up	19
ISSG - Deformity (non-UCAPONY pts)	Soroceanu	in follow-up	32
CSORN	Soroceanu	enrolling/data collection	5939

Projects submitted to ethics

Calgary Endoscopic Spine Surgery: CSORN Registry Sub-Study	Yang/Thomas/Casha/du Plessis	ethics	
Effect of Childbearing on Spinopelvic Alignment (EChOS)	Nicholls	ethics	
AO SMART	Nicholls/Swamy	ethics	
Impact of ERAS Program on Spine Surgery Patients: A Retrospective Study	Yang	ethics	
Activity parameters in normative population and adult spine deformity patients	Nicholls	ethics	

Quality Improvement Initiatives

Urinary catheter avoidance and early removal after elective lumbar fusion surgery	Yang	data collection	
Results of the first 100 Enhanced Recovery After Surgery Program for lumbar fusion surgery in Calgary	Yang	analysis	
Improving documentation rates for mobilization after lumbar fusion surgery	Yang	data collection	
Development of an automated audit system for Enhanced Recovery After Surgery program in lumbar fusion surgery	Yang	data collection	

GRADUATE STUDENT AWARDS

Congratulations to Taylor Bader and Valerie Cates, who were recently selected for the Alberta Spine Foundation Graduate Student Award.

Taylor Bader



Title: Defining the Role of the Protease HTRA1 on Spinal Deformities Using Proteomic Profiling of Intervertebral Disc Components

Summary: The etiology of intervertebral disc degeneration and spinal deformities is not well characterized despite its prevalence. To better explore why some patients, primarily post-menopausal females, develop these debilitating conditions, we have been studying annulus fibrosus samples from surgical patients. Thus far, our studies have revealed reductions in the shear modulus and increased protease activity, HTRA1, in degenerative scoliosis patients when compared to aligned degenerative patients and healthy donors.

To expand on these findings, we aim to perform proteomic and degradomics profiling to characterize the proteome of individuals. Expanding our sample set to include males and females and at various disease severities will explore how the proteome changes. Due to this disease being uniquely human, in-vivo models will include the use of a novel HTRA1 inhibitor with Phase I clinical trials applied directly to explants of excised annulus fibrosus tissue cultured in in-vitro.

This study directly addresses a central proteomic comparison between sexes, non-diseased, degenerative, and deformity intervertebral discs. Our multifaceted and novel approach, combining mechanics, proteomics, and culture of annulus fibrosus explants, will define the potential role of HTRA1 in intervertebral disc degeneration, and the results will have implications for future treatment via development of new interventions.

Valerie Cates

Val's work, the Development of a Patient Decision Aid for Adult Spinal Deformity; Using Visual Art to Draw a Better Understanding, was recently featured in an [article by McCaig's Stephanie Symington](#). We look forward to sharing more about her research in our upcoming annual report.

We've set up a PubMed alert to identify primary and collaborative publications from members of our program. Here are some of the papers published since our last newsletter.

Are insufficient corrections a major factor in distal junctional kyphosis? A simulated analysis of cervical deformity correction using in-construct measurements. Ani F, Sissman E, Woo D, **Soroceanu A**, Mundis G, Eastlack RK, Smith JS, Hamilton DK, Kim HJ, Daniels AH, Klineberg EO, Neuman B, Sciubba DM, Gupta MC, Kebaish KM, Passias PG, Hart RA, Bess S, Shaffrey CI, Schwab FJ, Lafage V, Ames CP, Protopsaltis TS. J Neurosurg Spine. 2024 Feb 16;40(5):622-629. doi: 10.3171/2023.12.SPINE23481. Print 2024 May 1. PMID: 38364226

Impact of Hip and Knee Osteoarthritis on Full Body Sagittal Alignment and Compensation for Sagittal Spinal Deformity. Balmaceno-Criss M, Lafage R, Alsoof D, Daher M, Hamilton DK, Smith JS, Eastlack RK, Fessler RG, Gum JL, Gupta MC, Hostin R, Kebaish KM, Klineberg EO, Lewis SJ, Line BG, Nunley PD, Mundis GM, Passias PG, Protopsaltis TS, Buell T, Scheer JK, Mullin JP, **Soroceanu A**, Ames CP, Lenke LG, Bess S, Shaffrey CI, Schwab FJ, Lafage V, Burton DC, Diebo BG, Daniels AH; International Spine Study Group (ISSG). Spine (Phila Pa 1976). 2024 Jun 1;49(11):743-751. doi: 10.1097/BRS.0000000000004957. Epub 2024 Feb 20. PMID: 38375611

Analysis of tranexamic acid usage in adult spinal deformity patients with relative contraindications: does it increase the risk of complications? Mullin JP, Soliman MAR, Smith JS, Kelly MP, Buell TJ, Diebo B, Scheer JK, Line B, Lafage V, Lafage R, Klineberg E, Kim HJ, Passias PG, Gum JL, Kebaish K, Eastlack RK, Daniels AH, **Soroceanu A**, Mundis G, Hostin R, Protopsaltis TS, Hamilton DK, Gupta MC, Lewis SJ, Schwab FJ, Lenke LG, Shaffrey CI, Bess S, Ames CP, Burton D. J Neurosurg Spine. 2024 Mar 8;40(6):684-691. doi: 10.3171/2024.1.SPINE231098. Print 2024 Jun 1. PMID: 38457792

Stronger association of objective physical metrics with baseline patient-reported outcome measures than preoperative standing sagittal parameters for adult spinal deformity patients. Azad TD, Schwab FJ, Lafage V, **Soroceanu A**, Eastlack RK, Lafage R, Kebaish KM, Hart RA, Diebo B, Kelly MP, Smith JS, Daniels AH, Hamilton DK, Gupta M, Klineberg EO, Protopsaltis TS, Passias PG, Bess S, Gum JL, Hostin R, Lewis SJ, Shaffrey CI, Burton D, Lenke LG, Ames CP, Scheer JK. J Neurosurg Spine. 2024 Mar 8;40(6):692-699. doi: 10.3171/2024.1.SPINE231030. Print 2024 Jun 1. PMID: 38457811

Riluzole for Degenerative Cervical Myelopathy: A Secondary Analysis of the CSM-PROTECT Trial. Fehlings MG, Pedro KM, Alvi MA, Badhiwala JH, Ahn H, Farhadi HF, Shaffrey CI, Nassr A, Mummaneni P, Arnold PM, **Jacobs WB**, Riew KD, Kelly M, Brodke DS, Vaccaro AR, Hilibrand AS, Wilson J, Harrop JS, Yoon ST, Kim KD, Fourney DR, Santaguida C, Massicotte EM, Huang P. JAMA Netw Open. 2024 Jun 3;7(6):e2415643. doi:10.1001/jamanetworkopen.2024.15643. PMID: 38904964

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Risk stratification for early postoperative infection in Pediatric spinal deformity correction: development and validation of the Pediatric scoliosis infection risk score (PSIR score). Chan V, Shumilak G, Jafari M, Fehlings MG, **Yang MMH**, Skaggs DL. Eur Spine J. 2024 Jun 10. doi: 10.1007/s00586-024-08359-7. Online ahead of print. PMID: 38858267

Wound Closure and Wound Dressings in Adult Spinal Deformity Surgery From the AO Spine Surveillance of Post-Operative Management. Oe S, **Swamy G**, Gagliardi M, Lewis SJ, Kato S, Shaffrey CI, Lenke LG, Matsuyama Y; AO Spine Knowledge Forum Deformity. Global Spine J. 2024 Jun 13:21925682241262749. doi: 10.1177/21925682241262749. Online ahead of print. PMID: 38869180

Focal compression of the cervical spinal cord alone does not indicate high risk of neurological deterioration in patients with a diagnosis of mild degenerative cervical myelopathy. Al-Shawwa A, Craig M, Ost K, Anderson D, **Jacobs WB**, **Evaniew N**, Tripathy S, **Bouchard J**, **Casha S**, **Cho R**, **du Plessis S**, **Lewkonja P**, **Nicholls F**, **Salo PT**, **Soroceanu A**, **Swamy G**, **Thomas KC**, **Yang MMH**, **Cadotte DW**. J Neurol Sci. 2024 Jun 15;461:123042. doi: 10.1016/j.jns.2024.123042. Epub 2024 May 9. PMID: 38788286

A comparative cohort study of surgical approaches for adult spinal deformity at a minimum 2-year follow-up. Kazarian GS, Feuchtbaum E, Bao H, **Soroceanu A**, Kelly MP, Kebaish KM, Shaffrey CI, Burton DC, Ames CP, Mundis GM, Bess S, Klineberg EO, **Swamy G**, Schwab FJ, Kim HJ; International Spine Study Group. Eur Spine J. 2024 Jul 2. doi: 10.1007/s00586-024-08354-y. Online ahead of print. PMID: 38955866

Hip Osteoarthritis in Patients Undergoing Surgery for Severe Adult Spinal Deformity: Prevalence and Impact on Spine Surgery Outcomes. Diebo BG, Alsoof D, Balmaceno-Criss M, Daher M, Lafage R, Passias PG, Ames CP, Shaffrey CI, Burton DC, Deviren V, Line BG, **Soroceanu A**, Hamilton DK, Klineberg EO, Mundis GM, Kim HJ, Gum JL, Smith JS, Uribe JS, Kebaish KM, Gupta MC, Nunley PD, Eastlack RK, Hostin R, Protopsaltis TS, Lenke LG, Hart RA, Schwab FJ, Bess S, Lafage V, Daniels AH; International Spine Study Group. J Bone Joint Surg Am. 2024 Jul 3;106(13):1171-1180. doi: 10.2106/JBJS.23.00818. Epub 2024 Apr 29. PMID: 38958659

Surgical Management of Thoracolumbar Adjacent Segment Disease: Techniques and Outcomes in 107 Patients Undergoing Surgical Intervention. Bashti M, Daftari M, Brusko GD, Jamshidi AM, Singh EB, Boddu JV, Kumar V, **Yang MMH**, Wang MY. Int J Spine Surg. 2024 Jul 4;18(3):295-303. doi: 10.14444/8599. PMID: 38697844

Collagen integrity of the annulus fibrosus in degenerative disc disease individuals quantified with collagen hybridizing peptide. Dhiman MS, Bader TJ, Ponjevic D, **Salo PT**, Hart DA, **Swamy G**, Matyas JR, Duncan NA. JOR Spine. 2024 Jul 31;7(3):e1359. doi: 10.1002/jsp2.1359. eCollection 2024 Sep. PMID: 39092166

The Effects of Peri-Operative Adverse Events on Clinical and Patient-Reported Outcomes After Surgery for Degenerative Cervical Myelopathy: An Observational Cohort Study from the Canadian Spine Outcomes and Research Network. Malhotra AK, **Evaniew N**, Dea N, Fisher CG, Street JT, **Cadotte DW**, **Jacobs WB**, **Thomas KC**, Attabib N, Manson N, Hall H, Bailey CS, Nataraj A, Phan P, Rampersaud YR, Paquet J, Weber MH, Christie SD, McIntosh G, Wilson JR. Neurosurgery. 2024 Aug 1;95(2):437-446. doi: 10.1227/neu.0000000000002896. Epub 2024 Mar 11. PMID: 38465953

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Restoring L4-S1 Lordosis Shape in Severe Sagittal Deformity: Impact of Correction Techniques on Alignment and Complication Profile._Singh M, Balmaceno-Criss M, Daher M, Lafage R, Hamilton DK, Smith JS, Eastlack RK, Fessler RG, Gum JL, Gupta MC, Hostin R, Kebaish KM, Klineberg EO, Lewis SJ, Line BG, Nunley PD, Mundis GM, Passias PG, Protopsaltis TS, Buell T, Ames CP, Mullin JP, **Soroceanu A**, Scheer JK, Lenke LG, Bess S, Shaffrey CI, Schwab FJ, Lafage V, Burton DC, Diebo BG, Daniels AH; International Spine Study Group.World Neurosurg. 2024 Sep;189:e219-e229. doi: 10.1016/j.wneu.2024.06.021. Epub 2024 Jun 10.PMID: 38866236

Poor postoperative pain control is associated with poor long-term patient-reported outcomes after elective spine surgery: an observational cohort study._Yang MMH, Far R, Riva-Cambrin J, Sajobi TT, **Casha S**.Spine J. 2024 Sep;24(9):1615-1624. doi: 10.1016/j.spinee.2024.04.019. Epub 2024 Apr 28.PMID: 38685277

Does Ending a Posterior Construct Proximally at C2 Versus C3 Impact Patient Reported Outcomes in Degenerative Cervical Myelopathy Patients up to 24 months After the Surgery? Algarni N, Dea N, **Evaniew N**, McIntosh G, Jacobs BW, Paquet J, Wilson JR, Hall H, Bailey CS, Weber MH, Nataraj A, Attabib N, Rampersaud YR, **Cadotte DW**, Stratton A, Christie SD, Fisher CG, Charest-Morin R.Global Spine J. 2024 Sep;14(7):2062-2073. doi: 10.1177/21925682231166605. Epub 2023 Mar 24.PMID: 36960878

Lumbar Lordosis Redistribution and Segmental Correction in Adult Spinal Deformity: Does it Matter? Diebo BG, Balmaceno-Criss M, Lafage R, Daher M, Singh M, Hamilton DK, Smith JS, Eastlack RK, Fessler R, Gum JL, Gupta MC, Hostin R, Kebaish KM, Lewis S, Line BG, Nunley PD, Mundis GM, Passias PG, Protopsaltis TS, Turner J, Buell T, Scheer JK, Mullin J, **Soroceanu A**, Ames CP, Bess S, Shaffrey CI, Lenke LG, Schwab FJ, Lafage V, Burton DC, Daniels AH; International Spine Study Group (ISSG).Spine (Phila Pa 1976). 2024 Sep 1;49(17):1187-1194. doi: 10.1097/BRS.0000000000004930. Epub 2024 Jan 25.PMID: 38270393

T1 Pelvic and Lumbar Pelvic Angles Normative Values: A Prospective Cohort Study of 472 Asymptomatic Volunteers._Pelletier-Roy R, Ludwig T, Birk M, Smith V, Asmussen M, **Nicholls F**.Spine (Phila Pa 1976). 2024 Sep 11. doi: 10.1097/BRS.0000000000005157. Online ahead of print.PMID: 39258422

Intraoperative fluid management in adult spinal deformity surgery: variation analysis and association with outcomes._Cetik RM, Gum JL, Lafage R, Smith JS, Bess S, Mullin JP, Kelly MP, Diebo BG, Buell TJ, Scheer JK, Line BG, Lafage V, Klineberg EO, Kim HJ, Passias PG, Kebaish KM, Eastlack RK, Daniels AH, **Soroceanu A**, Mundis GM, Hostin RA, Protopsaltis TS, Hamilton DK, Hart RA, Gupta MC, Lewis SJ, Schwab FJ, Lenke LG, Shaffrey CI, Ames CP, Burton DC; International Spine Study Group.Spine Deform. 2024 Sep 12. doi: 10.1007/s43390-024-00966-0. Online ahead of print.PMID: 39264408

Expectations of clinical improvement following corrective surgery for adult cervical deformity based on functional disability at presentation._Passias PG, Onafowokan OO, Joujon-Roche R, Smith J, Tretiakov P, Buell T, Diebo BG, Daniels AH, Gum JL, Hamilton DK, **Soroceanu A**, Scheer J, Eastlack RK, Fessler RG, Klineberg EO, Kim HJ, Burton DC, Schwab FJ, Bess S, Lafage V, Shaffrey CI, Ames C; International Spine Study Group.Spine Deform. 2024 Sep;12(5):1431-1439. doi: 10.1007/s43390-024-00896-x. Epub 2024 Jul 31.PMID: 39083198

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Advanced MRI metrics improve the prediction of baseline disease severity for individuals with degenerative cervical myelopathy. Al-Shawwa A, Ost K, Anderson D, Cho N, **Evaniew N, Jacobs WB**, Martin AR, Gaekwad R, Tripathy S, **Bouchard J, Casha S, Cho R, du Plessis S, Lewkonja P, Nicholls F, Salo PT, Soroceanu A, Swamy G, Thomas KC, Yang MMH**, Cohen-Adad J, **Cadotte DW**. Spine J. 2024 Sep;24(9):1605-1614. doi: 10.1016/j.spinee.2024.04.028. Epub 2024 Apr 26.PMID: 38679077

Necessity of posterior osteotomies for mild flexible cervical deformity correction. Eastlack RK, Lakomkin N, Tran S, Jelousi M, **Soroceanu A**, Passias P, Protopsaltis T, Smith JS, Klineberg E, Bess S, Lafage V, Hamilton DK, Kim HJ, Burton D, Shaffrey CI, Ames CP, Mundis G.J Neurosurg Spine. 2024 Sep 13:1-8. doi: 10.3171/2024.5.SPINE231223. Online ahead of print.PMID: 39270323

Preoperative expectations of patients with degenerative cervical myelopathy: an observational study from The Canadian Spine Outcomes Research Network (CSORN). Althagafi A, Dea N, **Evaniew N**, Rampersaud RY, **Jacobs WB**, Paquet J, Wilson JR, Hall H, Bailey CS, Weber MH, Nataraj A, Attabib N, **Cadotte DW**, Phan P, Christie SD, Fisher CG, Manson N, **Thomas K**, McIntosh G, Charest-Morin R.Spine J. 2024 Sep;24(9):1595-1604. doi: 10.1016/j.spinee.2024.04.027. Epub 2024 Apr 26.PMID: 38679073

How Good Are Surgeons at Achieving Their Preoperative Goal Sagittal Alignment Following Adult Deformity Surgery?_Smith JS, Elias E, Sursal T, Line B, Lafage V, Lafage R, Klineberg E, Kim HJ, Passias P, Nasser Z, Gum JL, Eastlack R, Daniels A, Mundis G, Hostin R, Protopsaltis TS, **Soroceanu A**, Hamilton DK, Kelly MP, Lewis SJ, Gupta M, Schwab FJ, Burton D, Ames CP, Lenke LG, Shaffrey CI, Bess S; International Spine Study Group.Global Spine J. 2024 Sep;14(7):1924-1936. doi: 10.1177/21925682231161304. Epub 2023 Feb 23.PMID: 36821516

The T4-L1-Hip Axis: Sagittal Spinal Realignment Targets in Long-Construct Adult Spinal Deformity Surgery: Early Impact. Hills J, Mundis GM, Klineberg EO, Smith JS, Line B, Gum JL, Protopsaltis TS, Hamilton DK, **Soroceanu A**, Eastlack R, Nunley P, Kebaish KM, Lenke LG, Hostin RA Jr, Gupta MC, Kim HJ, Ames CP, Burton DC, Shaffrey CI, Schwab FJ, Lafage V, Lafage R, Bess S, Kelly MP; International Spine Study Group.J Bone Joint Surg Am. 2024 Sep 18. doi: 10.2106/JBJS.23.00372. Online ahead of print.PMID: 39292767

Satisfaction in surgically treated patients with degenerative cervical myelopathy: an observational study from CSORN. Chu Kwan W, Ailon T, Dea N, **Evaniew N**, Rampersaud R, **Jacobs WB**, Paquet J, Wilson JR, Hall H, Bailey CS, Weber MH, Nataraj A, **Cadotte DW**, Phan P, Christie SD, Fisher CG, Singh S, Manson N, **Thomas KC**, Toor J, **Soroceanu A**, McIntosh G, Charest-Morin R.Spine J. 2024 Sep 26:S1529-9430(24)01044-1. doi: 10.1016/j.spinee.2024.09.24. Online ahead of print.PMID: 39341576

The Influence of Wait Time on Surgical Outcomes in Elective Lumbar Degenerative Spine Conditions: A Retrospective Multicentre Cohort Study. Bond M, Charest-Morin R, Street J, Fisher C, Dea N, Singh S, Paquet J, Abraham E, Bailey C, Weber M, Nataraj A, Attabib N, Kelly A, Rampersaud R, Manson N, Phan P, **Thomas K, Soroceanu A**, LaRue B, Ahn H, Marion T, Christie S, Glennie A, Zhi W, Hall H, Sutherland JM.Global Spine J. 2024 Sep 25:21925682241287463. doi: 10.1177/21925682241287463. Online ahead of print.PMID: 39322408

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High-Dose TXA Is Associated with Less Blood Loss Than Low-Dose TXA without Increased Complications in Patients with Complex Adult Spinal Deformity. Kim AH, Mo KC, Harris AB, Lafage R, Neuman BJ, Hostin RA, **Soroceanu A**, Kim HJ, Klineberg EO, Gum JL, Gupta MC, Hamilton DK, Schwab F, Burton D, Daniels A, Passias PG, Hart RA, Line BG, Ames C, Lafage V, Shaffrey CI, Smith JS, Bess S, Lenke L, Kebaish KM; International Spine Study Group. J Bone Joint Surg Am. 2024 Oct 3. doi: 10.2106/JBJS.23.01323. Online ahead of print. PMID: 39361771

Outcome prediction following lumbar disc surgery: a longitudinal study of outcome trajectories, prognostic factors, and risk models. Hébert JJ, Bigney EE, Nowell S, Wang S, Wedderkopp N, Small C, Abraham EP, Attabib N, **Evaniew N**, Paquet J, Charest-Morin R, Singh S, Weber MH, Kelly A, Kingwell S, Crawford E, Nataraj A, Marion T, LaRue B, Ahn H, Hall H, Fisher CG, Rampersaud YR, Dea N, Bailey CS, Manson NA. J Neurosurg Spine. 2024 Oct 4;1-10. doi: 10.3171/2024.6.SPINE24430. Online ahead of print. PMID: 39366025

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The implantable system that restores hemodynamic stability after spinal cord injury. AA Phillips, AP Gandhi, N Hanco, S Hernandez-Charpal, J Rimok, A Incognito, AEJ Nijland, M D'Ercole, A Watrin, M Berney, A Damianaki, G Dumont, N Macellari, L De Herds, E Baaklini, D Smith, R Miller, J Leel, N Interling, J-B Ledoux, J Garcia Ordonez, T Newton, EF Meliado, L Duguet, C Jacquet, L Bole-Feysot, M Rieger, K Gelenitis, Y Dumeny, D Ganty, E Paoles, T Baumgartner, Clinical Study Team, Onward Team, C Harte, C-D Sasportes, P Romo, T Vouga, J Fasola, J Ravier, M Gautier F Merlos, R Buschman, T Milekovic, A Rowald, S Mandija, CAT van den Berg, N Kuster, E Neufeld, E Pralong, L Hirt, S Carda, F Becce, E Aleton, K Rogan, P Schoettker, G Wuerzner, N Langeral, NLW Keijser, BK Kwon, JD Guest, E Ross, J Murphy, E Kurt, **S Casha**, F Girgis, I van Nes, KA Larkin-Kaiser, R Demesmaeker, L Asboth, JW Squair, J Bloch, G Courtine. Preprint Nature Medicine. doi: <https://doi.org/10.1101/2024.05.10.24306826>



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STAFF UPDATES



Naila Jamani

“Being a part of this program has shown me real-life examples of just how critical this research is”.

Naila joined our program as a Research Coordinator in September. Naila graduated with both a BSc and MSc in Psychology at the University of Calgary, where during her masters she focused on brain and cognitive sciences. She is working on CSORN at Caleo Health and PRAXIS. Having a background in behavioural neuroscience and circadian rhythms, she has found being a part of this program and clinical research overall to be eye-opening and extremely fulfilling.

Farewell to Michelle Derevyansky! We wish her all the best as she begins her studies in the Master of Physician Assistant program at University of Calgary. Thank you for your contribution to the program Michelle and we look forward to seeing you around Foothills Medical Centre, perhaps in a spine rotation.



Michelle Derevyansky

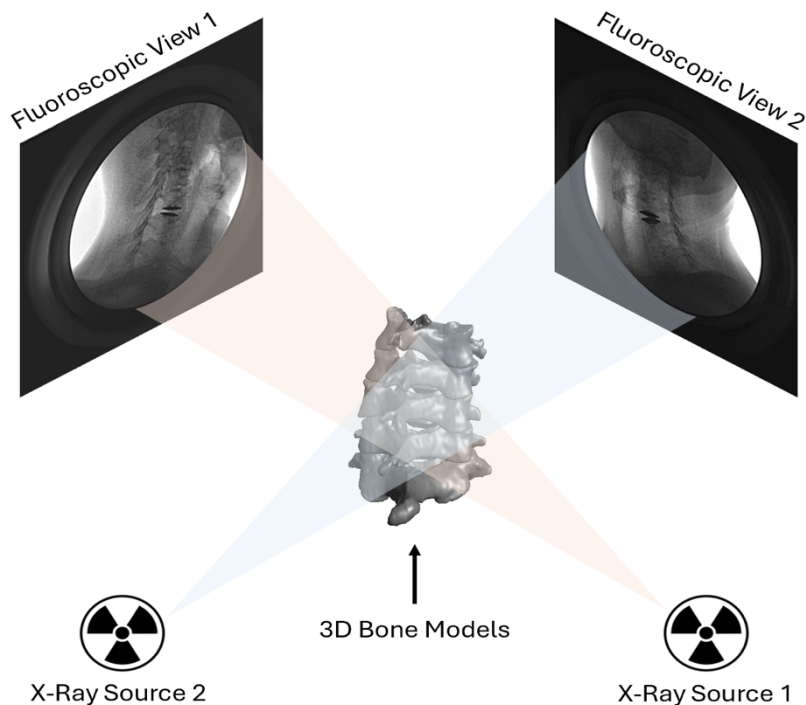
Emily Bangsboll



Emily is a current biomedical engineering master's student completing research under the supervision of Dr. Ganesh Swamy and Dr. Janet Ronsky. Her thesis work, funded by the Alberta Spine Foundation, NSERC, and Alberta Innovates, is titled: *In vivo* kinematic outcomes of cervical total disc arthroplasty using dual fluoroscopy.

Cervical total disc arthroplasty (cTDA) emerged as a mobility preserving alternative to spinal fusion for the treatment of intervertebral disc degeneration.

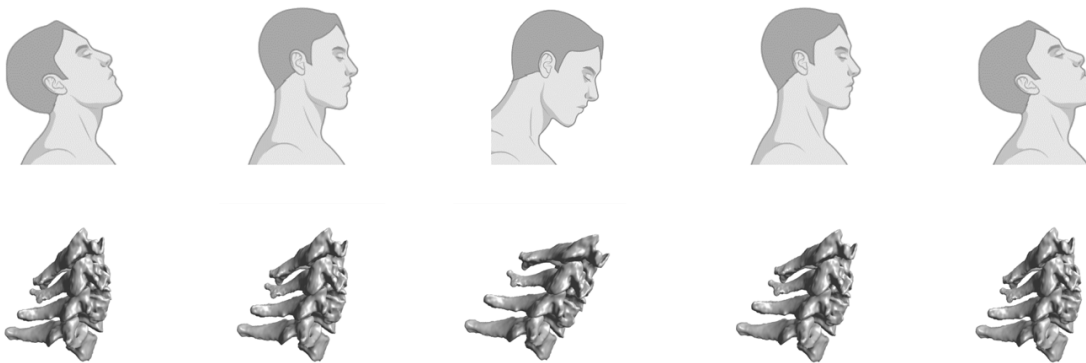
By enabling motion, cTDA has been shown to have protective effects on the adjacent segments and has resulted in reduced reoperation rates due to adjacent segment disease compared to fusion. The M6-C (Orthofix Medical Inc., Lewisville, TX) artificial disc represents a new generation of cTDA devices that aim to mimic the natural structure and six degrees of freedom of the intervertebral disc. However, recent reports of heterotopic ossification and wear-related concerns highlight the need for further research on cTDA designs and their associated kinematic effects *in vivo*.



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Dual fluoroscopy is a dynamic imaging modality that has been previously identified as a tool for computing 3D *in vivo* kinematics of the cervical spine with high accuracy. To date, limited high resolution *in vivo* kinematic data has been obtained for cTDA; we believe that such data will allow for the accurate characterization of implant behavior under physiological conditions and identification of favourable kinematic features of current cTDA devices.

Post-cTDA Flexion-Extension



This study is the first to implement dual fluoroscopy to assess changes in 3D *in vivo* cervical spine kinematics pre- and post-cTDA, and our findings reveal improvements in rotational, translational, and coupled motion patterns at the 3-month follow-up. This investigation will establish a foundation for long-term evaluation of intervertebral kinematics post-cTDA, facilitate comparisons across different implant types, and ultimately guide the development of improved artificial disc designs to improve clinical outcomes.



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FELLOWS' RESEARCH PROJECTS

Our current Spine Fellows are well underway with their fellowship research projects. Thanks to each of them for their efforts and their supervisors for their support and mentorship. We hope to see some of these projects presented at the next Canadian Spine Society Annual Meeting. They will also submit to the AOSpine North America Fellows' Forum in the spring. Here are their primary projects:

Newton Cho - working with Dr. David Cadotte:

Spinal Cord Tract Integrity in Degenerative Cervical Myelopathy - manuscript submitted, revisions requested.

Ru Raj - working with Dr. Michael Yang:

Early results of the Enhanced Recovery After Surgery Program for Lumbar Fusion Surgery in Calgary - analysis in progress

Drew Mulhall - working with Dr. Michael Yang and Dr. Ken Thomas:

Endoscopic Spine Surgery: Scoping Review - analysis in progress

Chien Yew Kow - working with Dr. Fred Nicholls:

Assessment of Distribution Patterns in Normal Kyphosis - analysis in progress



IMPORTANT DEADLINES

MEETINGS	SUBMISSION DATES	MEETING DATES	LOCATION
American Academy of Orthopaedic Surgeons Meeting AAOS	Closed	March 10-14, 2025	San Diego, California
CSS- 25th Annual Scientific Conference of the Canadian Spine Society	October 1- Nov 5, 2024	February 25-28, 2025	Charlevoix, Quebec
Atlantic Canada Spine Meeting	TBD	TBD	TBD
Britspine	Now - December 11, 2024	Mar 12-15, 2025	Manchester, England
Canadian Neurological Sciences Federation	Will open mid-Nov, 2024	June 9-12, 2025	Ottawa, Ontario
Canadian Orthopaedic Association -COA	Now until November 4, 2024	June 11-14, 2025	Vancouver, BC
Cervical Spine Research Society - CSRS	Closed	Dec 11-14, 2024	Chicago, IL
Congress of Neurological Surgeons	TBD	October 11-15, 2025	Los Angeles, CA
EuroSpine	TBD	October 22-24, 2025	Copenhagen, Denmark
Global Spine Congress (GCS)	Closed	May 28-31, 2025	Rio de Janeiro, Brazil
International Society for the Advancement of Spine Surgery AS/ISASS	Early 2025	April 10-12, 2025	Miami Beach, FLA, USA
International Society of Orthopaedic Centers (ISOC)	TBD for members only	November 13-16, 2024	Santiago, Chile
NASS North American Spine Society	Now until February 3, 2025	November 14-17, 2025	Denver, Colorado
Scoliosis Research Society SRS	TBD	September 16-20, 2025	Charlotte, North Carolina
SFCR Société Française de Chirurgie du Rachis	Closed	November 11-13, 2024	Paris, France
Société de Scoliose du Québec	Closed	October 24-26, 2024	Le Germain Charlevoix, Quebec, Canada
Society of Minimally Invasive Spine Surgery	TBD	October 2-4, 2025	Las Vegas, Nevada
Spine Society of Australia SSA	Now until Nov 9, 2024	Apr 4-6, 2025	Perth, Australia
ISSLS The International Society for the Study of the Lumbar Spine	Now until Nov 15, 2024	May 12-16, 2025	Atlanta, Georgia
International Spinal Cord Society Annual Scientific Meeting	TBD	October 8-11, 2025	Gothenburg, Sweden
AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves	Closed	May 3-6, 2024	McCormick Place Chicago IL

LOOKING FORWARD



Faculty Development Night

November 6, 2024, at 6:00 pm
Calgary Winter Club
Bin 818 private dining room

Topic: Spine Triage in Calgary - Caleo and STAC

Speakers: Dr. Thomas and Dr. du Plessis

Future Newsletters

If you have comments, ideas or submissions for a future newsletter, contact

Nathan Evaniew nathan.evaniew@ucalgary.ca

or

Tara Whittaker sri@ucalgary.ca