

RESEARCH



UNIVERSITY OF
CALGARY
SPINE PROGRAM



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Dear Colleagues,

Welcome to our Spring 2024 edition of the University of Calgary Spine Program Research Newsletter. We are pleased to showcase many current research activities once again. Features in this issue include:

- Dr. Yang, Dr. Thomas, and team were recently awarded 8.2 million dollars from the Calgary Healthy Foundation to establish a Calgary Endoscopic Spine Surgery and Early Recovery After Surgery (ERAS) program - amazing!
- A warm welcome to our new research team members Michelle and Anand. We are fortunate and excited to have you both join our team.
- Thanks to our fellows and other trainees for their excellent work presenting many abstracts as podiums and posters at the recent annual meeting of the Canadian Spine Society. Great job also to our faculty members for leading or moderating many various sessions.



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

Project Tracker

Prospective RCTs in follow-up			
Immunotherapy for Acute SCI (Abbvie)	Jacobs	Active Complete	1 4
CAPREG: i-FACTOR + Matrix Bone Graft Device in Spinal Fusion	Jacobs	in follow-up	60
Prospective RCTs enrolling			
No current acute projects			
Clinical Studies - Observational			
Cervical Myelopathy (CSM)	Cadotte/Jacobs/Evaniew	enrolling/data collection	594
Ant vs post surgery for lumbar isthmic spondy: multicenter prospective cohort study	Thomas/Evaniew	enrolling/data collection	3
Indirect Decompression in the Surgical Treatment of Degenerative Spondylolisthesis	Thomas	enrolling/data collection	0
Degenerative Spondy Cohort Study (CSORN)	Fisher/Thomas	in follow-up	42
Surgical Treatment of Adult Spinal Deformity (CSORN Deformity Module)	Soroceanu/Swamy	enrolling/data collection	241
Surgical Treatment of Adult Spinal Deformity (CSORN non-module)	Soroceanu/Swamy	enrolling/data collection	68
qMRI & cervical myelopathy (CSORN)	Cadotte	enrolling/data collection	178
Natural History of Mild DCM (CSORN)	Cadotte	enrolling/data collection	32
Mechanical difference in IVD of degenerative scoli and spondy (CSORN)	Swamy	enrolling/data collection	188
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	
Can Systemic inflammatory profiles predict Natural history of lumbar disc herniations	Swamy/Salo	enrolling/data collection	169
Quantifying In Vivo Cervical Spine Motion and Influence of Cervical Total Disc Arthroplasty	Swamy/Salo/Bouchard	enrolling/data collection	2
Quantifying chronic opioid use in adult spine deformity patients	Soroceanu	analysis	
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	

Clinical Studies – Observational...

Intradiscal hydrogel failure leading to neurological injury- a case report	Yang	manuscript prep	
Patient expectations of thoracolumbar deformity surgery	Soroceanu/Thomas /Singh	manuscript prep	
DCM Mortality	Evaniew/Jacobs	analysis	
MCID for NDI	Evaniew	Manuscript prep	
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	enrolling/data collection	
Impact of an outpatient group pain education and psychotherapy program in spine surgery patients	Eckenswiler/Swamy	enrolling/data collection	
Mobilization - Lumbar Fusion surgery patients	Yang/Lewkonina	enrolling/data collection	

Prospective Data Collection

PRAXIS-Rick Hansen SCI database	Casha/Cadotte	enrolling/data collection	805
PRAXIS- Non-Traumatic patients	Casha/Cadotte	enrolling/data collection	131
ISSG - Deformity (UCAPONY pts)	Soroceanu	in follow-up	19
ISSG - Deformity (non-UCAPONY pts)	Soroceanu	in follow-up	32
CSORN	Soroceanu	enrolling/data collection	5645

Projects submitted to ethics

Calgary Endoscopic Spine Surgery: CSORN Registry Sub-Study	Yang/Thomas/ Casha/du Plessis	ethics	
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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	

NEW STAFF



Join us in welcoming Anand Oliveira Masson as our newest research coordinator. Anand is supporting Dr. Michael Yang in the development and growth of the Calgary Endoscopic Spine Surgery and ERAS initiatives. With a background in biomedical engineering and musculoskeletal research, including a PhD focused on knee osteoarthritis at UCalgary McCaig Institute, Anand is excited to embark on the journey into spine clinical research. She looks forward to the positive impact these programs will have on advancing spinal research and improving patient outcomes.

Meet Michelle Derevyansky, who joined our program in January and hit the ground running. She came to us having graduated from Western University with Bachelor in Medical Sciences with a double-major in Pathology and Pharmacology. Michelle is focused on the Canadian Spine Outcomes & Research Network (CSORN) at Kaleo Health and the Rick Hansen Spinal Cord Injury Registry (RHSCIR). In her short tenure, Michelle has elegantly developed operating procedures designed to streamline her projects.



Calgary Health Foundation Awards \$8.2 Million to Michael Yang and Ken Thomas for Groundbreaking Spine Surgery Program

We are excited to announce a significant milestone in the advancement of spine surgery and research in Calgary. Michael Yang and Ken Thomas has been awarded \$8.2 million from the Calgary Health Foundation to launch the *Calgary Endoscopic Spine Surgery, Research, and Advancement (CESSRA) Program*. This transformative initiative aims to redefine spine care through innovation, research, and education.

[Introducing CESSRA](#)

CESSRA is set to become a leading center for excellence in spine surgery, research, and education. With a focus on cutting-edge techniques and patient-centered care, the program aims to improve outcomes, reduce recovery times, and advance the field of spine surgery.

[Five Main Priorities of CESSRA](#)

1. **Endoscopic Spine Surgery:** CESSRA will specialize in ultra-minimally invasive endoscopic spine surgery. Patients will experience less pain, faster recovery, and better outcomes compared to traditional open surgeries. The program will initially focus on treating lumbar pathologies, followed by cervical and thoracic pathologies as the program matures.
2. **Awake Spine Surgery:** The program will introduce awake spine surgery techniques. This will negate the side effects of general anesthesia, improve postoperative patient recovery, and reduce intraoperative OR resource utilization. In collaboration with our anesthesia colleagues, we will also increase our regional anesthetic offerings for spinal surgery.
3. **Enhanced Recovery After Surgery (ERAS) in Spinal Surgery:** CESSRA will implement evidence-based ERAS protocols tailored to spinal surgery, focusing on optimizing patient recovery, reducing complications, and shortening hospital stays.
4. **Clinical Research:** CESSRA is committed to advancing the field of spine surgery through innovative clinical research. The research program will focus on efficacy and comparative effectiveness, surgical technique and indication, training/education, and health economics.
5. **Education:** CESSRA will serve as a national hub for education and training in endoscopic spine surgery. The program will offer workshops, seminars, and hands-on training opportunities for healthcare professionals, ensuring the highest standards of care for patients.

[Meet Our Dedicated Team](#)

CESSRA's core endoscopic surgeons include Dr. Steven Casha, Dr. Stephan du Plessis, Dr. Ken Thomas, and Dr. Michael Yang.

We are thrilled to welcome Dr. Anand Masson, PhD, as the program's dedicated research coordinator. With her expertise and passion for spinal research, Dr. Masson will facilitate clinical research initiatives of CESSRA, driving innovation and excellence in spine care.

We are also pleased to introduce Sierra Simms, RN, as our patient nurse navigator. Sierra will play a crucial role in guiding patients through their treatment journey, providing support, education, and personalized care to ensure a seamless and positive experience.

We will also be recruiting up to two intraoperative neuromonitoring specialists to help support our expanding intraoperative monitoring needs.

The CESSRA Program is also supported by Dr. Bradley Jacobs, Chair of the Calgary Spine Program, Danielle Michaud (Operational Manager for Spine Surgery), and Erin Barrett (Quality Improvement Lead).

[A Bright Future Ahead](#)

With the generous support of the Calgary Health Foundation and the leadership of Michael Yang and Ken Thomas, CESSRA is poised to make a lasting impact on the field of spine surgery. We are excited about the potential of this program to transform patient care, drive innovation, and shape the future of spine surgery in Calgary and beyond.

Stay tuned for more updates and insights as CESSRA continues to grow and make strides in advancing spine care.

For more information about CESSRA and how you can get involved, please contact Michael Yang (minhan.yang@ucalgary.ca) or Ken Thomas (kthomas@ucalgary.ca)

[About Calgary Health Foundation](#)

Calgary Health Foundation is dedicated to raising funds to support breakthrough initiatives, research, and technologies that improve patient care and enhance the quality of healthcare in Calgary and surrounding areas. Through community support and collaboration, the foundation continues to make a difference in the lives of patients and families across the region.



CALL FOR SUPPORT

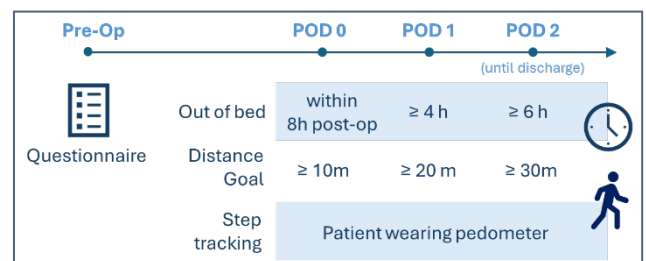
ENHANCING SURGICAL OUTCOMES THROUGH MOBILIZATION: CALL FOR SUPPORT

Dr. Yang has an upcoming prospective cohort study aimed at investigating the [effects of early mobilization](#) on length of hospital stay and perioperative outcomes in patients undergoing [elective lumbar fusion surgery](#).

As we prepare for patient recruitment, we're reaching out for your invaluable support, [informing patients about potential study participation](#). We will be inviting eligible patients to participate in this study in the weeks leading up to surgery or at day surgery prior to their operation.

WHAT CAN YOUR PATIENT EXPECT?

- [Pre-operative questionnaire](#)
- [Early mobilization at POD 0](#): assisted or unassisted within 8 hours after surgery
- [Time out of bed goals](#): set for POD 1 & POD 2 (until discharge)
- [Pedometer tracking](#): during their hospital stay
- [Healthcare staff or research coordinator visit](#): to record compliance with mobility protocol



ELIGIBLE POPULATION:

- Adults aged 18+ | Elective short segment thoracolumbar fusion (≤ 5 levels) | T10 or below
- No staged procedure | No cancer-related surgery | No urgent or emergent surgery |
- Contraindications to early post-operative mobilization

For more information contact:

Principal Investigator

Dr. Michael Yang

Research Coordinator

Anand Oliveira Masson

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(403)-944-3443

The 24th Annual Scientific Conference of the Canadian Spine Society was held in beautiful Whistler, British Columbia from February 28 to March 2, 2024. Our trainees presented many abstracts as poster or podiums, and our faculty also contributed to leading and moderating many sessions. Extra rounds of applause are warranted for Dr. Lewkonja and Dr. Evaniew who “won” their respective Great Debates about anterior column reconstruction in oncological surgery for spinal metastases and laminectomy alone for Degenerative Cervical Myelopathy. It was great as always to network and catch up with colleagues from across the country. Next year’s annual meeting will be held at the Fairmont Le Manoir Richelieu in scenic La Malbaie QC - Feb 25-28, 2025.

Podium 60	Pelletier-Roy, R	T1 Pelvic and Lumbar Pelvic Angles Normative Values: A Prospective Cohort Study of 496 Asymptomatic Volunteers
Podium 61	Craig, Michael	Automated MRI detection and prediction of clinical worsening in mild cervical myelopathy
Podium 11	Evaniew, Nathan	Anterior versus posterior surgery for patients with Degenerative Cervical Myelopathy: An observational study from the Canadian Spine Outcomes and Research Network
P-67	Ost K, Al-Shawwa A, Anderson D, Evaniew N, Jacobs WB, Lewkonja P, Nicholls F, Salo T, Thomas K, Yang M, Cadotte D	Can Classical Machine Learning Models Predict Long-Term Degenerative Cervical Myelopathy Outcomes?
P-68	Sarraj M, Rajapaksege N, Dea N, Evaniew N , McIntosh G, Guha D, Pahuta M	The Relative Importance of Cervical Myelopathy Treatment Outcomes to Spine Surgeons and Family Physicians in Canada; A Discrete-Choice Experiment
P-77	Parekh A, Sanders E, Birk M, Nicholls F	Effect of Forteo (Teriparatide) in reducing osteoporosis related complications in spine deformity patients
P-82	Birk M, Pelletier-Roy R, Ludwig T, Evaniew N, Lewkonja P, Thomas K, Swamy G, Jacobs WB, Nicholls F	Inter-rater reliability of partially automated segmentation of spinal radiographs in adult spinal deformity patients using KEOPS
P-87	Bader T, Dhiman M, Hart D, Duncan N, Salo P, Swamy G	Structure-Function Relationships of Degenerative and Degenerative Scoliosis Annulus Fibrosus – a Possible Etiological Factor in Adult Deformities

P-102	Amin P, Raj A, McIntosh G, Neilsen C, Swamy G , Rampersaud R	The impact of concurrent deformity on patient reported outcome following 1-3 level lumbar surgery no aimed at deformity correction
P-105	Dhiman M, Bader T, Hart D, Swamy G , Duncan N	Measuring Differences between Interlamellar Properties of the Annulus Fibrosus from Degenerative Disc Disease and Non-Diseased Young Donor Patients
P-106	Dhiman M, Bader T, Ponjevic D, Matyas J, Hart D, Swamy G , Duncan N	Assessing Collagen Damage in Annulus Fibrosus from Degenerative Disc Disease Patients using a Collagen Hybridizing Peptide
P-141	Jacobs WB , Witiw CD, Essa A, Harrop JS, Mariscal G	Impact of tobacco on non-union rate and patient-reported outcomes in spinal fusion surgery: A systemic review and meta-analysis
P-142	Witiw CD, Jacobs WB , Essa A, Harrop JS, Mariscal G	The economic burden of diabetes in spinal fusion surgery: A systematic review and meta-analysis
P-155	Witiw CD, Harrop JS, Jacobs WB , Mariscal G, Essa A	The economic burden of diabetes in spinal fusion surgery: A systematic review and meta-analysis
P-156	Jacobs WB , Witiw CD, Essa A, Harrop JS, Mariscal G	Meta-analysis of the effects of diabetes mellitus on fusion rates and patient-related outcomes in spinal fusion surgery
P-158	Lasswell T, Hu R , Bailey C, Siddiqi F, Rasoulinejad P	Cost Savings Analysis Through a Direct-to-Hospital Sales Model for Interbody Cages





HIGHLIGHTS

It is our pleasure to highlight the work of Valerie Cates, who was recently selected for the AbSPORU Graduate Studentship Award.

Development of a Patient Decision Aid for Adult Spinal Deformity; Using Visual Art to Draw a Better Understanding

Back pain impacts people throughout their life and is a leading cause of global disability. Unfortunately, back pain can be particularly difficult to manage, especially for patients with an adult spinal deformity (ASD).

ASD is a complex condition where the spine changes alignment with age. It is unclear why people develop this condition, but it can greatly impact their quality of life through pain and disability. In fact, the literature suggests that patients with an ASD report poorer quality of life compared to other chronic health conditions, mentally commit to corrective surgery before meeting a surgeon, and have relatively high rates of decisional regret as a result. This indicates a need for decisional resources, like patient decision aids (PtDAs).

PtDAs are patient-centered tools that can help people learn more about their condition and treatment options, as well as provide opportunities for personal value clarifications. In orthopaedics, PtDAs can catalyze conversation by improving patient-physician trust and decreasing decisional conflict. However, many PtDAs prioritize text-based presentation despite the known benefits of visuals.

This study aims to develop a custom and visually engaging PtDA for patients with ASD using reflexive thematic analysis and system usability scales. We are conducting several multidisciplinary rounds of heuristic evaluations with those involved with ASD surgery, including pre-operative and post-operative patients, caregivers, clinicians, artists, and PtDA/shared decision-making researchers. The final PtDA will be used in our Calgary surgical practice and across Canada through the Canadian Spine Outcomes and Research Network (CSORN). Our ultimate goal is to not only develop and implement a much-needed ASD PtDA, but to highlight the importance of visuals in patient educational materials and help patients and their loved ones see the bigger picture.

Val was recently featured in an [article by McCaig's Stephanie Symington](#).

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.

Thornley P, Urquhart JC, Glennie A, Rampersaud R, Fisher C, Abraham E, Charest-Morin R, Dea N, Kwon BK, Manson N, Hall H, Paquette S, Street J, Siddiqi F, Rasoulinejad P, Bailey CS. Functional outcomes correlate with sagittal spinal balance in degenerative lumbar spondylolisthesis surgery. *Spine J.* 2023 Oct;23(10):1512-1521. doi: [10.1016/j.spinee.2023.06.004](https://doi.org/10.1016/j.spinee.2023.06.004). Epub 2023 Jun 10. PMID: 37307882.

Ajoku U, Johnson MG, McIntosh G, Thomas K, Bailey CS, Hall H, Fisher CG, Manson N, Rampersaud YR, Dea N, Christie S, Abraham E, Weber MH, Charest-Morin R, Attabib N, le Roux A, Phan P, Paquet J, Lewkonina P, Goytan M. Temporal analysis of complication rates of cervical spine surgery for degenerative spine disease between younger and older cohorts using the CSORN registry: Is age just a number? *Eur Spine J.* 2023 Oct;32(10):3583-3590. doi: [10.1007/s00586-023-07882-3](https://doi.org/10.1007/s00586-023-07882-3). Epub 2023 Aug 18. PMID: 37596474.

Kaplan A, Boivin M, Bouchard J, Kim J, Hayes S, Licskai C. The emerging role of digital health in the management of asthma. *Ther Adv Chronic Dis.* 2023 Nov 17;14:20406223231209329. doi: [10.1177/20406223231209329](https://doi.org/10.1177/20406223231209329). PMID: 38028951; PMCID: PMC10657529.

Ajisebutu A, Hasen M, Berrington N, Dhaliwal P. Patient Selection Criteria in Ambulatory Spine Surgery: Single Canadian Provincial Experience. *World Neurosurg.* 2023 Oct;178:e213-e220. doi: [10.1016/j.wneu.2023.07.034](https://doi.org/10.1016/j.wneu.2023.07.034). Epub 2023 Jul 14. PMID: 37454907.

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Evaniew N, Davies B, Farahbakhsh F, Fehlings MG, Ganau M, Graves D, Guest JD, Korupolu R, Martin AR, McKenna SL, Tetreault LA, Vedantam A, Brodt ED, Skelly AC, Kwon BK. Interventions to Optimize Spinal Cord Perfusion in Patients with Acute Traumatic Spinal Cord Injury: An Updated Systematic Review. *Global Spine J.* 2024 Mar;14(3_suppl):58S-79S. doi: [10.1177/21925682231218737](https://doi.org/10.1177/21925682231218737). PMID: 38526931; PMCID: PMC10964891.



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Kudos to our Research Director, Nathan Evaniew, who guest edited the recently released Special Issue of *Global Spine Journal*, together with Michael Fehlings, Brian Kwon and Lindsay Tetreault.

AO Spine and Praxis Spinal Cord Institute Guidelines for the Management of Acute Spinal Cord Injury

“This Focus issue, sponsored by AO Spine and the Praxis Spinal Cord Institute, presents state-of-the-art systematic reviews and guidelines related to a number of key topics in traumatic and nontraumatic spinal cord injury (SCI). Established by an international and multi-disciplinary group of experts applying the GRADE methodology, the guidelines within this Focus Issue will help clinicians optimize the management of patients with SCI in an effort to enhance outcomes.”



IMPORTANT DEADLINES

MEETINGS	SUBMISSION DATES	MEETING DATES	LOCATION
Global Spine Congress (GCS)	Closed	May 15-18, 2024	Bangkok, Thailand
SAS/ISASS International Society for the Advancement of Spine Surgery	Closed	April 26-28, 2024	Miami Beach, Florida
SSA - Spine Society of Australia	Closed	April 5-7, 2024	Sydney, Australia
Canadian Neurological Sciences Federation	Closed	May 21-24 th , 2024	Toronto, Ontario, Canada
COA - Canadian Orthopaedic Association	Closed	June 12-15, 2024	Halifax, Nova Scotia
SRS Scoliosis Research Society	Closed	September 11-14, 2024	Barcelona, Spain
Congress of Neurological Surgeons	Now-May 14, 2024	September 28-October 2, 2024	Houston, Texas, USA
EuroSpine	Closed	October 2-3, 2024	Vienna, Austria
Society of Minimally Invasive Spine Surgery	Now-May 24, 2024	September 5-7, 2024	Las Vegas, Nevada USA
The International Spinal Cord Society Annual Scientific Meeting	Closed	September 22-25, 2024	Antwerp, Belgium
NASS North American Spine Society	Closed	September 25-28, 2024	Chicago, IL
CSRS Cervical Spine Research Society	March 6-April 24, 2024	December 11-14, 2024	Chicago, IL
Britspine	TBD	TBD	TBD
AAOS American Academy of Orthopaedic Surgeons Meeting	1-Apr-2024	March 10-14, 2025	San Diego, California
CSS- 20th Annual Scientific Conference of the Canadian Spine Society	October 1-October 31, 2024	February 25-February 28, 2025	Charlevoix, Quebec
International Society of Orthopaedic Centers (ISOC)	TBD for members only	November 13-16, 2024	Santiago, Chile
AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves	May 30 th to Nov 7 th , 2023	May 3-6, 2024	McCormick Place Chicago IL
ISSLS The International Society for the Study of the Lumbar Spine	Closed	May 27-31, 2024	Milan, Italy
Atlantic Canada Spine Meeting	TBD	October 18-20, 2024	Fox Harbour Golf Resort and Spa, Nova Scotia



The Alberta Spine Foundation has awarded two studentships:

- Ross Fraleigh under Dr. Paivi Miettunen
Project: Spinal Outcomes in Pediatrics
CRMO Patients Treated with Pamidronate
- Curtis Ostertag under Dr. Fred Nicholls
Project: Microbial Colonization of
Orthopedics and Spinal Implants

We have had wonderful engagement at our first two Faculty Development Nights, held at the Calgary Winter Club. Thanks to Dr. Yang, Dr. Cadotte, Dr. Hu and Dr. Swamy for their excellent and interesting presentations.



LOOKING FORWARD



Future Newsletters

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

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