

Short-Form-36 Physical Component Summary (SF-36-PCS). MC subgroup on pre-operative MRI was recorded by a single neuro-radiologist. **Results:** 179 patients were included. The sample prevalence of MC on pre-operative MRI was 62%; MC2 was most common (35%). No differences in pre-operative scores were identified, regardless of present or absent MC. For the overall cohort, improvement in assessment scores were observed: SF-36 improved an average of 8.2 points (95% CI: [5.8, 10.7]), ODI by 11.3 points (95% CI: [8.7, 14.0]), and VAS by 2.8 points (95% CI: [2.1, 3.5]). In nearly all cases, MCID values were met. **Conclusions:** Clinically significant improvement in post-operative pain, disability, and HRQoL was observed for both procedures. Modic change on pre-operative MRI was not associated with worse clinical assessment scores.

## P.231

### A Quantitative Degenerative Lumbar Spondylolisthesis Instability Classification (DSIC) System to Reduce Variation in Surgical Treatment

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**Background:** The Degenerative lumbar Spondylolisthesis Instability Classification (DSIC) system categorizes spondylolisthesis (stable, potentially unstable, unstable) based on surgeon impression. It does not contain objective criteria. **Objective-1:** Develop a quantitative-DSIC system from predetermined radiographic/clinical variables. **Objective-2:** Compare qualitative (surgeon-assigned) and quantitative (objective) DSIC Types. **Objective-3:** Determine proportion of patients receiving more invasive surgery than warranted based on the objective system. **Methods:** Patients from 8 centers were enrolled prospectively (2015–2020). Radiographic/clinical variables were collected and included/excluded from the quantitative DSIC system based on prior systematic review. Scores were converted to DSIC Types: 0-2 points (“Stable”; Type 1), 3 points (“Potentially Unstable”; Type 2), 4-5 points (“Unstable”; Type 3). Surgical procedures performed were compared to those suggested by the objective system. **Results:** Quantitative DSIC scores were calculated (309 patients). The score includes five variables: facet effusion, disc height, translation, disc angle, and low back pain. Quantitatively, 57% were stable, 34% potentially unstable, and 9% unstable patients. Qualitatively, 30% were stable, 53% potentially unstable, and 17% unstable patients. Surgeons assigned more instability than the objective scoring system in 42% of cases. More invasive surgery was performed in 57% of cases. **Conclusions:** Surgeons are more likely to categorize greater degrees of spinal instability than what is objectively scored.

## P.232

### Motor Recovery after Early Surgical Decompression in Cervical ASIA A Spinal Cord Injury Patients

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**Background:** Despite growing evidence for early surgical decompression for traumatic cervical spinal cord injury (tCSCI) patients, controversy surrounds the efficacy of early surgical decompression on patients with a complete (ASIA A) cervical injury. **Methods:** Patients with ASIA A cervical tCSCI were isolated from 4 prospective, multi-center datasets. Patients who had a Glasgow coma scale of less than 13, were over the age of 70 or under 16 were excluded. Significant gain was defined to include those that recovered more than two muscle groups (greater than 3/5 power) below their level of injury. Analysis of variance (ANOVA) was then done to compare significant gain over the 1 year follow-up period for patients with and without early decompressive surgery (<24hrs). **Results:** We identified 420 cervical ASIA A tCSCI patients. The mean number of muscle groups gained was 2.69 (SD 2.3.12) for those who had early surgery compared to 2.37 (SD 3.38) for those with late surgery. Of those patients who had early surgery 39.67% had a significant improvement vs. 28.76% of those who did not have early surgery (P = 0.030). **Conclusions:** For the first time, we have shown a clear therapeutic benefit of early surgical decompression within 24 hrs in ASIA A tCSCI patients.

## P.233

### Implementation of an Enhanced Recovery After Surgery (ERAS) Protocol for Scheduled Spine Surgery

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**Background:** Enhanced Recovery After Surgery (ERAS) Protocols improve post-surgical outcomes through decreased length of hospital stay, reduced readmission rates, decreased post-operative pain, and greater patient satisfaction. ERAS also has significant benefits to the healthcare system through reduced cost of post-operative care. While ERAS protocols are well established in many surgical fields, a complete guideline for spine surgery is lacking. Early ERAS studies in spine surgery suggest up to a 50% reduction in length of stay (LOS) and decreased cost of care. **Methods:** Primary literature review followed by multidisciplinary critical appraisal for optimization and redesign of our current system of care for scheduled spine

surgery (SSS), including patient experience and team logistics from initial consultation through post-operative care and follow up. **Results:** An evidence-based guideline, optimizing pre-, intra-, and post-operative phases of care was developed. Specific focus catered to pre-operative education and patient barriers to discharge. Further improvements in pre-admission patient goal setting, introduction of a patient care “passport”, post-operative reduction in narcotic administration, and increased same day post-operative mobilization were means to reduce LOS. **Conclusions:** A spine ERAS pathway was developed, allowing our care program to better facilitate patient recovery after SSS. Future work will aim to determine economic impact of the pathway.

## P.234

### “Inappropriate” spinal ultrasounds for suspected occult spinal dysraphism in northern Alberta

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**Background:** Occult spinal dysraphism (OSD) may be associated with visible cutaneous manifestations. A common non-pathological mimic of a dermal sinus tract is an incidental sacrococcygeal dimple. Choosing Wisely Canada Guidelines recommend these dimples not be imaged. **Methods:** This study assessed the appropriateness of spinal ultrasounds performed for the investigation of an OSD. We interrogated our local imaging system to analyze spinal ultrasounds being performed in babies less than 6 months of age, from 2017-2018. **Results:** 429 children had spinal ultrasounds ordered by pediatricians (55%), family doctors (21%), and neonatologists (20%). 183 children (43%) had imaging indications that was deemed “inappropriate”. Some of this cohort had further MRI imaging (5/183) or neurosurgical referral (8/183). None of these children underwent neurosurgery. 231 (54%) children had appropriate indications for imaging. Within this cohort MRI imaging (23/231), neurosurgical referral (24/231) and neurosurgical intervention occurred (4/231). All four “surgical children” harboured either a dorsal appendage or a

subcutaneous lipoma. We estimated, declining inappropriate scans would save \$22, 500 annually. **Conclusions:** A significant portion of local spinal ultrasound requests for OSD are inappropriate. Collaboration with other sites is ongoing to investigate if the Choosing Wisely guidelines for imaging this patient population are being practiced more efficiently.

## P.235

### Differences in Human, Pig, and Rat Spinal Cord Stem Cells in Response to Inflammatory and Regenerative Factors In Vitro

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**Background:** While the use of neural stem/progenitor cells has been reported as a promising therapeutic approach for spinal cord injury, direct comparison of adult primary animal spinal cord NSPCs have not been compared to human NSPCs under the same conditions to characterize intrinsic differences between human/animal NSPC response to inflammatory/regenerative factors. **Methods:** To mimic post-injury inflammation, primary-derived NSPCs from adult humans, pigs, and rats were treated with pro-inflammatory factors. To direct regeneration, NSPCs were treated with retinoic acid, platelet-derived growth factor or bone morphogenic protein-(BMP4) to induce neurons, oligodendrocytes or astrocytes, respectively. Cultures were treated for 7 or 14 days and characterized by immunocytochemistry. **Results:** Pro-inflammatory factors promoted more astrogenesis in rat and pig NSPCs compared to human NSPCs and induced neuronal differentiation in human NSPCs. RA increased neurogenesis of human and rat NSPCs, PDGF $\alpha$  increased oligodendrocyte differentiation of rat NSPCs, and BMP4 increased astrogenesis of human and rat NSPCs. **Conclusions:** For the first time, differences in response of human, pig and rat primary NSPCs to inflammatory and regenerative factors have been identified. Better understanding of these differences is essential to improving the successful translation of regenerative therapies to humans.