subsequent radiation. Recurrence of his disease led to resection of his 3rd and 4th ribs and repeat radiation. He presented 6 years later with 2 episodes of massive hemoptysis. Review of the literature was conducted to search for similar complications. **Results:** A Chest Computed Tomography scan demonstrated the presence of a pedicle screw tip in the right pulmonary artery. Angiogram revealed no evidence of active arterial extravasation. In the operating room, the patient had a right lower lobectomy, with segmental pulmonary artery sacrifice, as well as replacement of the spinal fixation hardware. Literature review revealed multiple aortic injuries following spinal instrumentation. However, this was the first case of pulmonary artery erosion. **Conclusions:** Spinal instrumentation has been associated with screw migration and penetration of nearby tissues and vessels. A high incidence of suspicion is required when patients present with delayed and unusual complications.

## P.225

### Factors Contributing to Prolonged Length of Stay in Adults Undergoing Spine Surgery: Results from a Quaternary Spinal Care Center

*MN Hindi* (Vancouver)* *C Dandurand* (Vancouver) *S Paquette* (Vancouver) *B Kwon* (Vancouver) *T Ailon* (Vancouver) *M Dvorak* (Vancouver) *N Dea* (Vancouver) *R Charest-Morin* (Vancouver) *C Fisher* (Vancouver) *M Boyd* (Vancouver), *J Street* (Vancouver)

doi: 10.1017/cjn.2021.474

**Background:** Prolonged length of stay (LOS) is associated with increased resource utilization and worse outcomes. The goal of this study is identifying patient, surgical and systemic factors associated with prolonged LOS overall and per diagnostic category for adults admitted to a quaternary spinal care center. **Methods:** We performed a retrospective analysis on 13,493 admissions from 2006 to 2019. Factors analyzed included patient age, sex, emergency vs elective admission, diagnostic category (degenerative, deformity, oncology, trauma), presence of neurological deficits in trauma patients, ASIA score, operative management and duration, blood loss, and adverse events (AEs). Univariate and multivariate analyses determined factors associated with prolonged LOS. **Results:** Overall mean LOS (±SD) was 15.80 (±34.03) days. Through multivariate analyses, predictors of prolonged LOS were advanced age ($p<0.001$), emergency admission ($p<0.001$), advanced ASIA score ($p<0.001$), operative management ($p=0.043$), and presence of AEs ($p<0.001$), including SSI ($p=0.001$), other infections (systemic and UTI) ($p<0.001$), delirium ($p=0.006$), and pneumonia ($p<0.001$). The effects of age, emergency admission, and AEs on LOS differed by diagnostic category. **Conclusions:** Understanding patient and disease factors that affect LOS provides opportunities for QI intervention and allows for an informed preoperative discussion with patients. Future interventions can be targeted to maximize patient outcomes, optimize care quality, and decrease costs.

## P.226

### Variations in and Determinants of Length of Stay at an Academic Spinal Care Center from 2006-2019

*C Dandurand* (Vancouver) *MN Hindi* (Vancouver)* *T Ailon* (Vancouver) *M Boyd* (Vancouver) *R Charest-Morin* (Vancouver) *N Dea* (Vancouver) *M Dvorak* (Vancouver) *C Fisher* (Vancouver) *B Kwon* (Vancouver) *S Paquette* (Vancouver), *J Street* (Vancouver)

doi: 10.1017/cjn.2021.476

**Background:** Length of stay (LOS) is a surrogate for care complexity and a determinant of occupancy and service provision. Our primary goal was to assess changes in and determinants of LOS at a quaternary spinal care center. Secondary goals included identifying opportunities for improvement and determinants of future service planning. **Methods:** This is a prospective study of patients admitted from 2006 to 2019. Data included demographics, diagnostic category (degenerative, oncology, deformity, trauma, other), LOS (mean, median, interquartile range, standard deviation) and in-hospital adverse events (AEs). **Results:** 13,493 admissions were included. Mean age has increased from 48.4 (2006) to 58.1 years (2019) ($p=<0.001$). Mean age increased overtime for patients treated for deformity ($p=<0.001$), degenerative pathology ($p=<0.001$) and trauma ($p=<0.001$), but not oncology ($p=0.702$). Overall LOS has not changed over time ($p=0.451$). LOS increased in patients with degenerative pathology ($p=0.019$) but not deformity ($p=0.411$), oncology ($p=0.051$) or trauma ($p=0.582$). Emergency admissions increased overtime for degenerative pathologies ($p=<0.001$). AEs and SSIs have decreased temporally ($p=<0.001$). **Conclusions:** This is the first North American study to analyze temporal trends in LOS for spine surgery in an academic center. Understanding temporal trends in LOS and patient epidemiology can provide opportunities for intervention, targeted at the geriatric populations, to reduce LOS.

## P.227

### Investigating the changes in ITP after CSF drainage in patients with acute traumatic SCI: Results from a Quaternary Spinal Care Center

*MN Hindi* (Vancouver)* *CM Gee* (Vancouver) *S Paquette* (Vancouver) *T Ailon* (Vancouver) *M Dvorak* (Vancouver) *N Dea* (Vancouver) *R Charest-Morin* (Vancouver) *C Fisher* (Vancouver) *J Street* (Vancouver) *M Boyd* (Vancouver) *A Tsang* (Vancouver) *L Belanger* (Vancouver) *L Ritchie* (Vancouver), *B Kwon* (Vancouver)

doi: 10.1017/cjn.2021.495

**Background:** Mean arterial pressure augmentation is one current established practice for management of patients with SCI. We present the first data investigating the effectiveness of Intrathecal Pressure (ITP) reduction through CSF drainage (CSFD) in managing patients with acute traumatic SCI at a large

academic center. **Methods:** Data from 6 patients with acute traumatic SCI were included. A lumbar intrathecal catheter was used to monitor ITP and volume of CSFD. CSFD was performed and recorded hourly. ITP recordings were collected hourly and the change in ITP was calculated (hour after minus before CSFD). 369 data points were collected and change in ITP was plotted against volume of CSFD. **Results:** Data across all patients showed variability in the ITP over time without a significant trend (slope=0.016). We found no significant change in ITP with varying amounts of CSFD (slope=0.007, $r^2$=0.00, p=0.88). Changes in ITP were not significantly different across groups of CSFD but the variation in the data decreased with increasing levels of CSFD. **Conclusions:** We present the first known data on changes in ITP with varying degrees of CSFD in patients with acute traumatic SCI. These results may provide insight into the complexity of ITP changes in patients post-injury and help inform future SCI management.

## P.228

### Pre-operative Surrogates Markers of Frailty and Metastatic Spine Disease: Systematic Review

*CJ Touchette* (Sherbrooke) *MA MacLean* (Halifax)* *T Brunette-Clement* (Montreal) *FH Abduljabba* (Jeddah) *MH Weber* (Montreal), *DR Fourney* (Saskatoon)

doi: 10.1017/cjn.2021.519

**Background:** Despite the inherent importance of physical reserve and ability to tolerate surgery, pre-operative patient-specific surrogate markers of frailty that may improve accuracy of outcome prognostication following surgery for SMD are not well described**. Methods:** A systematic review was performed according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. MEDLINE, Scopus, EMBASE, Cochrane Registry of Controlled Trials, CINAHL, and Web of Science were searched. Quality of evidence was scored using the Oxford CEBM Scoring Tool. **Results:** Forty studies accounted for 8,364 patients. Surgical indications included neurological dysfunction, intractable pain, and spinal instability. Tumor histology varied across and within studies. Age, gender, performance status, neurologic function, comorbidities, and biochemical abnormalities were the most frequently analyzed pre-operative surrogate markers of frailty. The most commonly assessed outcomes were overall and progression-free survival; few studies examined health-related quality of life, peri-operative adverse events, and post-operative complications. **Conclusions:** This study highlights the need for objective measures of frailty in order to improve risk stratification and outcome prognostication among patients receiving surgery for metastatic spinal disease. Future studies should address identified knowledge gaps pertaining to peri-operative adverse events, post-operative complications, and health-related quality of life outcomes.

## P.229

### Epidemiology and Outcomes of Neck Pain Following Surgery for Degenerative Cervical Radiculopathy

*MA MacLean* (Halifax)* *A Dakson* (Halifax) *F Xavier* (Halifax) *SD Christie* (Halifax), *C Investigators* (Toronto)

doi: 10.1017/cjn.2021.520

**Background:** Many studies have demonstrated improved arm pain (AP) following surgery for degenerative cervical radiculopathy (DCR); however, axial neck pain (NP) is generally not felt to improve. The purpose of this study was to determine whether surgery for DCR improves NP. **Methods:** A ambispective cohort study of the Canadian Spine Outcomes Research Network (CSORN) registry for patients

who received 1-level, 2-level, 3-level ADCF (anterior cervical discectomy and fusion) or cervical disc arthroplasty (CDA) for DCR. Outcomes: 12-month post-operative Visual Analogue Scale for NP (VAS-NP), Neck Disability Index (NDI), VAS for AP (VAS-AP), Short-Form Physical Health Composite Scale (SF36-PCS), and Mental Health Composite Scale (SF36-MCS). **Results:** We identified 603 patients with DCR. CDA patients were the youngest (ANOVA; p<0.001). Patients reported similar pre-operative AP, NP, disability, and health-related quality of life, regardless of procedure (ANOVA; all P>0.05). All procedures offered a statistically significant reduction in VAS-NP, VAS-AP, and NDI (ANOVA; all P<0.001). Mean change from baseline in NP, AP, and disability, were similar across procedures. At 12 months, mean reduction in VAS-AP, VAS-NP, and NDI exceeded minimal clinically important differences for nearly all procedures. **Conclusions:** Patients undergoing surgery for DCR can expect a clinically significant, approximate 50% reduction in NP, AP, and neck-related disability.

## P.230

### Modic changes and clinical outcomes in patients undergoing lumbar surgery for disc herniation

*MA MacLean* (Halifax)* *N Kureshi* (Halifax) *J Shankar* (Winnipeg) *S Stewart* (Halifax), *SD Christie* (Halifax)

doi: 10.1017/cjn.2021.521

**Background:** Lumbar disc herniation (LDH) is a risk factor for Modic change (MC) development on spinal MRI. MC has been associated with worse pre- and post-operative pain, disability, and health-related quality of life (HRQoL). We examined the relationship between pre-operative MC and post-operative assessment scores for patients receiving discectomy (LD) or transforaminal interbody fusion (TLIF) for LDH. **Methods:** We reviewed 285 primary single-level surgeries. Pre-operative and 12-month post-operative assessment scores: Visual Analog Scale Leg-Pain (VAS-LP), Oswestry Disability Index (ODI), and