spondylolisthesis were included. The primary outcome was major complication. Secondary outcomes were readmission, reoperation, and discharge to location other than home. Logistic regression analysis was done to investigate the association between outcomes and frailty. **Results:** There were 15 658 patients in this study. The mean age was 62.5 years (SD 12.2). Frailty, as measured by the Modified Frailty Index-5 was significantly associated with increased risk of major complication, unplanned readmission, reoperation, and non-home discharge. Increasing frailty was associated with increasing risk of morbidity. **Conclusions:** Frailty is independently associated with higher risk of morbidity after posterior surgery in patients with lumbar spondylolisthesis. These data are of significance to clinicians in planning treatment for these patients.

P.222

Subjective pattern of postoperative neurological recovery in degenerative cervical myelopathy varies by preoperative severity of disease

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Background: Degenerative cervical myelopathy is a spinal disorder resulting in progressive spinal cord compression and consequent neurological deficits that can be assessed and tracked using the modified Japanese Orthopedic Association (mJOA) questionnaire. However, it is difficult to predict which patients will recover neurological function after surgery, making it difficult for clinicians to set reliable postoperative patient expectations. **Methods:** Sixty-eight operative myelopathy patients (50 male, 14 female) consented to complete the mJOA questionnaire both preoperatively and 6-months postoperatively. Fifteen of these patients had mild, twenty-three had moderate, and thirty had severe preoperative disease. **Results:** We found that in mild myelopathy, sensation and strength recover in similar proportions. In moderate myelopathy, a greater proportion of patients recover in each domain except for sensation. Recovery in severe myelopathy was comparable to moderate disease, but showed more dramatic recovery in sensation and sphincter function. **Conclusions:** This study shows that the severity of myelopathic disease influences the pattern of postoperative recovery. Though limited in sample size, the recovery patterns identified above are an important first step in recognizing myelopathy as a disease that patients experience heterogeneously both pre- and post-operatively. Our results will aid clinicians in goals-of-surgery discussions and assist with managing postoperative patient expectations.

P.223

Correlating the pre- and post-operative subjective experience of myelopathic impairments with the objective clinical exam

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Background: Degenerative cervical myelopathy is a debilitating condition of the spinal column resulting in a progressive, clinically measurable loss of motor and sensory function secondary to spinal cord compression. We sought to correlate the patient's subjective experience of specific myelopathic impairments with components of the objective clinical exam, to determine if the latter provides any clinically-relevant information postoperatively. **Methods:** Thirty-eight myelopathy patients consented to complete the mJOA questionnaire and receive a physical exam preoperatively, and 6-weeks and 6-months postoperatively. mJOA components were correlated with the physical exam using Spearman correlations with an alpha of 0.05. **Results:** mJOA scores for sensation and lower limb motor function correlated with the sensory and lower limb motor exams respectively, both preoperatively and 6-weeks postoperatively. mJOA scores for upper limb motor function did not correlate with the upper limb motor exam at either timepoint. **Conclusions:** At baseline and immediately postoperatively, patients self-report sensation and lower limb motor function accurately. However, the patients' subjective experience of upper limb motor function does not align with clinical exam findings, suggesting either a continued need for this component of the physical exam or a need for tools that better correlate with the patient's experience of upper limb motor impairment.

P.224

A Case Report of Spinal Screws Penetrating the Pulmonary Artery

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Background: Spinal instrumentation is commonly utilized to mechanically stabilize the spine in trauma, oncology and degenerative disease. Although several complications have been reported, this is the first case of screw penetration of the pulmonary artery. **Methods:** We present a case of a 74-year old gentleman who suffered from a thoracic spine chordoma. He underwent a T8 resection with T8-T12 instrumented fusion with

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

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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

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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

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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