Minimizing Post-Operative Opioid Use in Common Spine Surgeries: A Non-Inferiority Quality Improvement Study

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INTRODUCTION: The goal of this study is to minimize opioid-related adverse effects in post-operative patients by establishing a quantity and duration of opioid analgesia following surgical intervention. The opioid epidemic continues necessitating thoughtful prescribing patterns following posterior thoracolumbar spinal fusions (PSF) and anterior cervical discectomies and fusions (ACDF). This study will also survey patients' handling of excess pills and include options for safe disposal.

METHODS: This is a prospective quality improvement study with inclusion of patients >18 years of age, who underwent primary PSF divided into >3 levels or ≤ 3 levels, as well as ACDF of any number of levels. Patients with a pre-operative diagnosis of infection, malignancy, trauma, or those undergoing any additional surgery in a 6-month pre- and post-operative period were excluded. Those with primary diagnoses of cervical or thoracolumbar spinal stenosis, myelopathy, radiculopathy, or degenerative spondylolisthesis were included. Patients will be surveyed for their quantity and duration of opioid pills consumed, adverse opioid-related side effects, and method of pill disposal. Patient-reported outcomes including mJOA, ODI, and PROMIS Global General Health are also utilized pre- and post-operatively, as well as pre- and post-intervention to assess clinical function.

RESULTS SECTION: In preliminary, pre-intervention review of data, 377 patients met inclusion, 158 were excluded for incomplete data. The remaining 219 patients (89 ACDF, 130 PSF) shared common diagnoses of cervical myelopathy (n=47), cervical radiculopathy (n=17), low back pain (n=49), and lumbar spinal stenosis (n=21). Of the prescriptions provided, the average quantity was 44 pills; 23% (50/219) were prescribed pre-operatively. The average mJOA score was 13.38 (12.96 pre-op, 13.73 post-op), representing moderate myelopathy. The average ODI score was 31.3 (31.6 pre-op, 31.0 post-op) representing moderate disability. The average PROMIS general health value was 3 (1-5).

DISCUSSION: Limiting opioid utilization in the pre- and post-operative periods is of great value to reduce adverse medication effects. With the preliminary data collected, we will begin our intervention by decreasing the total prescription quantity. We do acknowledge patients may benefit from additional opioid analgesia greater than the initial prescription may allow for, but we believe less over time will lead to unchanged patient-reported outcomes and will result in similar scores for MJOA, ODI, and PROMIS data, with fewer adverse medication effects. Ultimately, we aim to provide guidance to the field on opioid pill quantity and duration that results in satisfactory outcomes with no difference in PROs, function, or overall outcome while minimizing adverse medication effects from prolonged use.

SIGNIFICANCE/CLINICAL RELEVANCE: (1-2 sentences): Ultimately, we aim to provide guidance on opioid quantity and duration that results in satisfactory outcomes with no difference in PROs, function, or overall outcome while minimizing adverse medication effects.

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