Paper 01. Risk Factors Associated with Development of Urinary Retention Following Posterior Lumbar Spinal Fusion

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Background/Introduction: Postoperative urinary retention (POUR) is common following lumbar spinal fusion procedures. Most risk factors that have been identified are nonmodifiable and therefore not useful for the prevention of this complication. The present study aims to further investigate characteristics associated with increased occurrence of POUR.

Materials/Methods: A retrospective cohort study was performed using consecutive patients who underwent posterior lumbar laminectomy and fusion at an academic institution between 2011 and 2018. Patient demographic and comorbidity information, operative characteristics and postoperative characteristics were collected. Patients with a history of urologic problems other than BPH or had a prior history of POUR were excluded. The standard protocol for all lumbar fusion patients at the institution is to document the first three post-void residuals (PVRs) using a bladder scan, with POUR necessitating straight catheterization defined as a PVR greater than 400ml. All variables were tested for association using a multivariate regression model created in backwards stepwise fashion, where variables with the highest p-value were sequentially removed until only those with p-values < 0.200 remained in the model. The threshold for statistical significance was set at p <0.05.

Results: 814 patients were included in this study. Average age was 58 years, average BMI was 30.89 and 52.95% of patients were female. Out of the total cohort, 138 (16.9%) had urinary retention requiring at least one straight catheterization. In the final multivariate model, prior diagnosis of BPH (Odds Ratio [OR] 3.46; p = <0.001), and American Society of Anesthesiologists (ASA) class 3 or greater (OR 1.58; p=0.043) were the best preoperative predictors of POUR, while prior history of lumbar spine surgery (OR 0.56; p=0.022) was associated with decreased rates of POUR. (Table 1) Glycopyrrolate use (OR 2.06; p=0.01) and postoperative urinary tract infection (UTI) [OR 5.72 p=0.004] were additionally associated with POUR.

Discussion/Conclusion: In a series of 814 posterior lumbar fusion patients, BPH, ASA 3 or greater, use of glycopyrrolate and postoperative UTI were independent predictors of POUR. The use of glycopyrrolate in anesthesia reversal is potentially modifiable and provides an attractive target for limiting the occurrence of this common, but impactful, complication following lumbar fusion.

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Background/Introduction: The use of first-generation cephalosporin, cefazolin, for antibiotic surgical prophylaxis in spine surgery remains strongly recommended. Given the distant cross-reactivity, patients with Penicillin (PCN) allergies are often not administered cephalosporins, but instead given less optimal alternative antibiotics. The reliability, however, of patient-reported penicillin allergies has been disputed. The purpose of this study was to determine the safety of administering beta-lactam antibiotics in those reporting a PCN.

Materials/Methods: A retrospective review of pertinent medical records of all patients undergoing complex lumbar spinal surgery at the University of Iowa between 2015-2016 that were referred to the Drug Allergy Clinic was performed. Primary outcome measure was comparison of penicillin skin testing results with patient reported drug allergies to PCN and/or beta-lactam antibiotics. Descriptive statistics were utilized for data analysis/interpretation.

Results: Overall, twenty-nine patients undergoing lumbar spine surgery with reported PCN allergies were referred to a Drug Allergy Clinic for evaluation of optimal surgical antibiotic prophylaxis. Of these referrals, 19 completed appointments in the Allergy Clinic where they underwent penicillin skin testing (PST), a drug challenge to a beta-lactam antibiotic, and/or had no intervention depending on the history obtained. Penicillin skin testing was performed on 17 of 19 (89%) patients. No testing was indicated in 2 patients as an allergy was ruled out by the history. A negative PST was noted in all 17 (100%) patients tested, indicating no penicillin allergy. Cefazolin was deemed safe to use in all 19 patients (100%) patients evaluated. Eighteen of the patients evaluated in the Allergy Clinic completed a lumbar surgery. Cefazolin in any surgical prophylaxis regimen was used in all 18 surgeries (100%) without any adverse peri-operative reactions.

Discussion/Conclusion: Patients with a self-reported history of PCN allergies are highly unlikely to have a reaction to Beta-Lactam antibiotics administered as surgical prophylaxis. A strong consideration should be given towards routine use of cefazolin despite reported allergies. Referral to a Drug Allergy Clinic is an excellent option to optimize surgical antibiotic prophylaxis in those with self-reported allergies.