**Smoking is an independent risk factor for 90-day readmission and reoperation following posterior cervical decompression and fusion**

**ABSTRACT**

**Background**: Posterior cervical decompression and fusion (PCF) is a common procedure used to treat various cervical spine pathologies, but the 90-day outcomes following PCF surgery continue to be incompletely defined.

**Objective**: This retrospective cohort study aims to identify risk factors associated with 90-day readmission and reoperation following PCF surgery.

**Methods**: Adults undergoing PCF from 2012 through 2020 were identified. Demographic and radiographic data, surgical characteristics, and 90-day outcomes were collected. Univariate analysis was performed using Student’s t-test, chi square, and Fisher exact tests as appropriate. Multivariable logistic regression models with lasso penalty were used to analyze various risk factors.

**Results**: A total of 259 patients were included. The 90-day readmission and reoperation rates were 9.3% and 4.6%, respectively. The most common reason for readmission was surgical site infection (33.3%) followed by new neurologic deficits (16.7%). Patients who smoked tobacco had three-fold greater odds of readmission compared to nonsmokers (OR: 3.48; 95% CI 1.87-6.67; p=.0001). Likewise, the most common reason for reoperation was surgical site infection (33.3%) followed by seroma and implant failure (25.0% each). Smoking was also an independent risk factor for reoperation, associated with nearly fourfold greater odds of return to the operating room (OR: 3.53; 95% CI 1.53-8.57; p=.003).

**Conclusion**: Smoking is a significant predictor of 90-day readmission and reoperation in patients undergoing PCF surgery. Smoking cessation should be strongly considered preoperatively in elective PCF cases to minimize the risk of 90-day readmission and reoperation.