

Should You Tell Your Surgeon that You Snore? The Effect of Treated vs Untreated OSA on Perioperative Outcomes in Elective Anterior Cervical Discectomy and Fusion Surgeries.

Background: Obstructive Sleep Apnea (OSA) is a common sleep-disorder characterized by the repeated collapse of the upper airway during sleep and is associated with a wide variety of cardiovascular complications. Anterior cervical discectomy and fusion (ACDF) is one of the most common procedures performed to treat cervical pathologies, often in patients with concomitant OSA. Limited literature exists examining the impact of preexisting OSA on patient outcomes following ACDF. The aim of this study was to determine whether patients with OSA have an elevated risk of postoperative complications following ACDF and if treatment of OSA prior to surgery impacts these complications.

Materials and Methods: The Mariner database was utilized to identify patients age 18-84 undergoing ACDF from 2010-2018, using Current Procedural Terminology (CPT) codes. Two main cohorts of patients were created, those with Obstructive Sleep Apnea (OSA) and control patients without OSA. Additional subgroups were created after stratifying for Body Mass Index (BMI) and treatment of OSA with Continuous Positive Airway Pressure (CPAP). Post-operative outcomes assessed included major complications, minor complications, dysphasia, emergency intubation, aspiration, dysphagia, infections, readmissions, and ED-visits within 90 days of surgery. Additionally, one and two year revision were assessed. Multivariate logistic regression was used to adjust for demographic and comorbid factors as well as number of levels operated on.

Results: For all comparisons assessed, there was no significant difference in demographic characteristics after matching (Table 1a, 2a, 3a, 4a). OSA alone did not confer increased risk of complications following ACDF ($p > 0.05$) (Table 1b). Subsequently, secondary analysis revealed untreated OSA is associated with increased risk of overall minor complications (7.9% vs 6.6%, OR 1.22, 95% CI 1.10-1.35, $p < 0.001$), pneumonia (1.9% vs 1.3%, OR 1.45, 95% CI 1.17-1.80, $p < 0.001$), deep vein thrombosis (1.1% vs 0.7%, OR 1.45, 95% CI 1.10-1.93, $p = 0.008$), urinary tract infection (2.8% vs 2.3%, OR 1.23, 95% CI 1.03-1.45), wound complications (2.3% vs 2.3%, OR 1.35, 95% CI 1.12-1.63, $p = 0.001$), sepsis (0.7% vs 0.5%, OR 1.50, 95% CI 1.05-2.15, $P = 0.023$), surgical site infection (4.5% vs 3.2%, OR 1.44, 95% CI 1.25-1.66, $p < 0.001$) (Table 2b). Similarly, non-obese patients untreated for OSA had worse outcomes than those treated for OSA: minor complications (4.4% vs 3.6%, OR 1.24, 95% CI 1.07-1.43, $p = 0.003$), overall major complications (7.8% vs 6.5%, OR 1.21, 95% CI 1.09-1.35, $p < 0.001$), pneumonia (1.9% vs 1.4%, OR 1.40, 95% CI 1.12-1.75, $p = 0.002$), deep vein thrombosis (1.0% vs 0.7%, OR 1.40, 95% CI 1.03-1.92, $p = 0.028$), wound complications (2.3% vs 1.8%, OR 1.28, 95% CI 1.05-1.56, $p = 0.013$), surgical site infection (4.1% vs 3.1%, OR 1.45 95% CI 1.25-1.69, $p < 0.001$) (Table 3b). Finally obesity didn't confer substantial risk as untreated OSA patients with obesity had similar to those that had treated OSA with the exception of urinary tract infection (2.6% vs 1.5%, OR 1.76, 95% CI 1.21-2.60, $p = 0.003$) (Table 4b).

Conclusion: Treatment of OSA in non-obese patients undergoing elective ACDF procedures appears to be associated with a decreased risk of DVT, pneumonia, wound complications, and UTI. Screening and treatment of OSA in non-obese individuals, a group of individuals not immediately thought of as being at risk for sleep apnea, may provide significant reductions in risks of postoperative complications. This

suggests that routine screening of all patients planning to undergo elective ACDF could be a fruitful endeavor to reduce postoperative complications.