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Metabolic Bone Disorders Are Predictors for Two-Year Adverse Outcomes in Patients Undergoing 2-3-Level Anterior Cervical Discectomy and Fusion for Cervical Radiculopathy or Myelopathy

Introduction: Metabolic bone disorders (MBDs) and cervical degenerative pathologies, including cervical radiculopathy and myelopathy (CR, CM), are prevalent in the aging population. However, the impact of MBDs on postoperative complications in patients undergoing 2-3-level anterior cervical discectomy and fusion (ACDF) for CR or CM are not well reported. In this study, we retrospectively evaluated the relationship between MBDs and postoperative complications in patients undergoing ACDF for degenerative cervical pathology.

Methods: We identified all patients in the SPARCS database with CR or CM who underwent 2-3-level ACDF from 2009 to 2011, ensuring 2-year follow-up. Patients with one or more baseline MBD (vitamin D deficiency, hyperparathyroidism, osteomalacia, or rickets) were 1:1 propensity score matched to patients without MBDs. A multivariate logistic regression was used to identify independent predictors of 2-year outcomes.

Results: 22,276 patients were retrieved (MBD, n=214; no-MBD, n=22,062). MBD patients had longer postoperative length of stay (6.1 vs. 3.2 days, $p<0.001$) and incurred higher hospital charges (\$49,493 vs. \$43,858, $p<0.048$). They had higher rates of pneumonia (4.7% vs. 2.1%), hematoma (3.3% vs. 0.7%), infection (2.8% vs. 0.9%), and sepsis (3.7% vs. 0.9%), all $p\leq 0.003$. There were higher rates of wound infections (4.2% vs. 1.2%) and surgical complications (9.8% vs. 3.2%) in MBD patients, both $p\leq 0.05$. They also had a higher 2-year complications rate (28.5% vs. 11.3%, $p<0.001$). Regression analysis showed baseline MBD was associated with 2-year surgical (OR=2.10, $p<0.001$) and medical complications (OR=1.84, $p=0.001$).

Discussion: Baseline MBD was associated with increased odds of developing postoperative complications following 2-3-level ACDF for CR or CM. Further research should be conducted to decrease postoperative complication risk and optimize postoperative care for MBD patients undergoing ACDF.