

**A Call to “Own the Bone”: Osteoporosis is a Predictor for Two-Year Adverse Outcomes in Patients Undergoing 2-3-level Anterior Cervical Discectomy and Fusion for Cervical Radiculopathy or Myelopathy**

**INTRODUCTION:** Osteoporosis (OP) is a highly prevalent condition. Yet, there remains limited information on complications that arise for OP patients who undergo anterior cervical discectomy and fusion (ACDF) for cervical radiculopathy or myelopathy (CR, CM).

**METHODS:** The New York State Statewide Planning and Research Cooperative System was used to identify patients with CR or CM who underwent 2-3-level ACDF between 2009 and 2011. Patients were separated into OP and no-OP groups, and were compared for demographics, hospital-related parameters, and rates of 2-year postoperative complications and reoperations. Logistic regression model was employed to identify predictors for 2-year outcomes.

**RESULTS:** 19,877 patients were identified (OP, n=348; No-OP, n=19,529). OP patients were older (62.7 vs. 50.2 years) and predominantly female (85.1% vs. 47.9%) (both,  $p<0.001$ ). OP patients had a higher comorbidity burden (mean Charlson/Deyo index score: 0.67 vs. 0.42,  $p<0.001$ ), and experienced longer postoperative hospital stay (3.3 vs. 2.2 days,  $p<0.001$ ), as well as greater total surgical visit charges (\$44,767 vs. \$39,584,  $p=0.002$ ). OP patients had higher overall medical (27.6% vs. 10.1%) and surgical (10.6% vs. 3.7%) complication rates, including implant-related (5.8% vs. 2.3%) and dural tear (1.4% vs. 0.5%) complications (both,  $p<0.05$ ). OP was found to be an independent predictor of any 2-year overall complication (OR=2.8), revision (OR=2.3), or medical complication (OR=1.8) (all,  $p\leq 0.011$ ).

**DISCUSSION:** OP was found to be significantly associated with adverse 2-year postoperative outcomes after 2-3-level ACDF for cervical degenerative pathologies. These results highlight the need for preoperative screening and management of osteoporosis for optimal outcomes.

Additional contributors to this project:

Mahee Islam, MS

Neil V. Shah, MD, MS

George Beyer, MD

Frank A. Segreto, BS

Salem Najjar, BA

Vincent Challier, MS

Frank J. Schwab, MD

Virginie Lafage, PhD

Bassel G. Diebo, MD