

The Impact of End-Stage Renal Disease on Outcomes and Complications Following Adult Spinal Fusion: A Propensity Scored-Match Analysis

Introduction: There is limited literature evaluating the impact of end-stage renal disease (ESRD) on long-term outcomes after spinal fusion surgery. This study aims to compare outcomes and complication rates between patients with and without ESRD undergoing spinal fusion surgery.

Methods: Using the National Inpatient Sample, patients, over the age of 18, admitted from 2005 to 2012 with an ICD9 code of ESRD (5856) who underwent spinal fusion (ICD9: 8102, 8103, 8104, 8105, 8106, 8107, 8108, 8132, 8133, 8134, 8135, 8136, 8137, 8138) were retrospectively reviewed. A 1:1 propensity score-match (PSM) by age, gender, and obesity status was performed. Univariate analyses evaluated demographics, complications, and mortality. To identify correlations between ESRD and postoperative spinal fusion outcomes multivariate binary logistic regression models were also conducted.

Results: A total of 1640 PSM patients were identified (ESRD: n=1640; non-ESRD: n=1640). Age, sex, and obesity status were comparable in both cohorts. ESRD was an independent risk factor of surgical complication (OR 3.6), wound complication (OR 3.3), prosthetic joint implant (OR 1.5), blood transfusion (OR 4.6), medical complication (OR 4.8), pulmonary complication (OR 2.8), pneumonia (OR 7.0), acute renal failure (OR 6.2), sepsis (OR 26.8), pulmonary embolism (OR 6.8), deep venous thrombosis (OR 5.2), cerebrovascular event (OR 4.0), and mortality (OR 11.6).

Conclusion: In the general adult population undergoing spinal fusion, patients with ESRD, compared to non-ESRD patients, had greater risk for mortality, surgical and medical complications. These results can support the management of postoperative expectations and concerns in this patient cohort.