

The Impact of Congestive Heart Failure on Outcomes and Complications Following Adult Spinal Fusion: A Propensity Score-Match Analysis

Objective: To compare outcomes and complication rates between patients with and without congestive heart failure (CHF) undergoing surgery for spinal fusion.

Methods: Using the National Inpatient Sample (NIS), patients 18 years old or older admitted from 2005 to 2012 with CHF who underwent spinal fusion were retrospectively reviewed. Using PSM analysis, this cohort was matched with a non-CHF cohort that also underwent spinal fusion. Univariate analyses evaluated demographics, complications, and mortality. Multivariate binary logistic regression models were used to identify correlations between CHF and postoperative spinal fusion outcomes, controlling for age, sex, and obesity.

Results: A total of 22422 propensity score-matched patients were identified (CHF: n=11211; non-CHF: n=11211). As compared to the non-CHF cohort, the CHF group had increased length of stay (8.8 days vs. 4.3 days, $p<0.001$), total hospital charges (\$130,791 vs. \$90,583, $p<0.001$), and Deyo score (2.6 vs. 0.7, $p<0.001$). Patients with CHF compared to patients without CHF had higher rates of surgical complication, wound complication, nonunion of fracture, prosthetic joint implant, blood transfusion, medical complication, altered mental status, acute myocardial infarction, pulmonary complication, pneumonia, acute renal failure, sepsis, pulmonary embolism, deep venous thrombosis, cerebrovascular event, and mortality (all, $p<0.05$).

Conclusion: In the general adult population undergoing spinal fusion, patients with CHF had greater surgical costs, length of stay, and Deyo scores compared to patients without CHF. Patients with CHF were also at increased risk for surgical and medical complications, and overall mortality. These results can guide future management of postoperative expectations and concerns in patients with similar characteristics.